

EDITORIAL 53

Management men need to know what makes people tick. Motivational research can uncover a lot.

SPECIAL FEATURE 99



Giving More Public Service

An important new dimension has been added to the role of the metalworking manager: Practical politics. The time to embrace it is now, while the movement is gathering momentum—the impact will be greater.

WINDOWS OF WASHINGTON 66

Look for Congress to amend Small Business Investment Act to make it easier to form investment firms.

MIRRORS OF MOTORDOM 73

The success of 1959 Fords can be traced in part to the company's marketing research studies.

THE BUSINESS TREND 77

STEEL's industrial production index gets largest week-to-week boost of year, sets new record.

WHERE TO FIND—

Behind the Scenes	6
Letters to the Editors	10
Editorial & Business Staffs	16
Calendar of Meetings	23
Men of Industry	81
New Products	131
New Literature	136
Advertising Index	169

Business—

METALWORKING OUTLOOK 47

- ✓ Steel Imports of 400,000 Tons in 2nd Month Seen if USW Strikes 55
- Steel Imports Cause Alarm in East—Seaway brings new problems 56
- ✓ USW Seeks to Spread Work—Proposal high on list of demands 57
- ✓ What Secretary Mitchell Thinks about 1959 Labor Issues 58
- Brass Sales Do About-Face—Downtrend since '55 is reversed 60
- Coal Industry Sees Good Years Ahead—Equipment makers agree 61
- Castings Take Airline Job—They'll support terminal roof 61
- Market Forge Pins Growth on R&D—It's major tool for any firm 62
- Cost Breakthrough for Vacuum Steel?—It could boost demand 64
- Latrobe Installs Vacuum Arc Furnace—Two to be added later 65
- Foundry Equippers Can Smile Again—Sales are picking up 69
- Canada Gets Big Pipe Mill—Edmonton, Alta., site chosen 87
- ✓ Giving More Public Service—A must for good business climate 99
- No. 4 in STEEL's Program for Management for 1959

Production—

TECHNICAL OUTLOOK 109

- ✓ Fasteners: Make or Buy?—A checklist will help you decide 110
- ✓ New Finishing Material Conforms to Shape of Workpiece 112
- ✓ Split Bearings Solve Special Jobs—Two types are produced 114
- Coal Thawed by Heat Lamps—Plan for a problem-free winter 115
- Infrared Heaters Eliminate Tie-up of Drying Conveyor 116
- Progress in Steelmaking—Reactor Treated Hot Metal Boosts Output of Steel 118
- Ultrasonic vs. Eddy Current—Many factors affect selection 122
- High Frequency Tube Welder Proves Efficient 125
- ✓ Ten New Machines Replace 14 Old Ones—Bonus: Extra capacity 128
- Welder Whips Fitup Problem—Deviation data stored on tape 129

Markets—

MARKET OUTLOOK 139

- Complete Index to Market News and Prices 139
- ✓ How New Ryerson Warehouse Pricing Works in Pittsburgh 141
- Steel Shipments in March Were Close to the Record 142
- Steel Ingot Production Best Ever Reported for April 147
- Steelworks operation chart and district ingot rates 148
- Pittsburgh Steel Quitting Merchant Wire Products Trade 148
- Scrap Index Slips a Little More 161
- Nonferrous Metals—Agree to Lead-Zinc Cutbacks 164

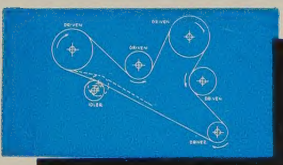
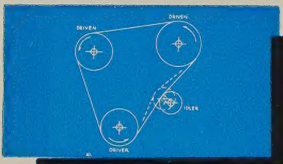
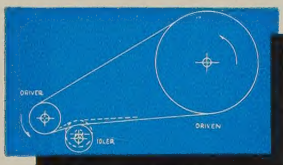
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How to

drive it with **Acme** chain and sprockets

Acme Precision Roller Chains and Sprockets are easily adaptable for most any drive where maximum efficiency is essential, a few of which are illustrated below.



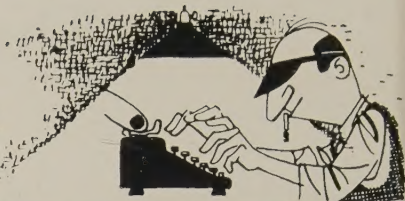
Acme Chains and Sprockets deliver Positive — Efficient — Economical — Flexible — Rugged — and Quiet Power Transmission. For the solution of your power transmission problems, send them to Acme.



Write Dept. 10-G for new illustrated 100 page catalog which includes new engineering section showing 36 methods of chain driving.



behind the scenes



Management Hies to Hustings

The Program for Management article this month (Page 99) concerns itself with something that management frequently toyed with but seldom formulated as a solid program: The encouragement of management participation in politics at the local level. The point brought out by the article is such participation pays off in many ways.

General Electric Co. was among the first industrial entities to recognize the need for this participation. It encouraged supervisory personnel to study civics. Bill Dean, STEEL's Chicago editor, and author of the article, reports that he was amazed at the size of the practical politics movement. "Many big companies that won't go on record just yet," he said, "are considering programs. I think the first real test will be the 1960 elections, although the time is really too short for much to be done."

You may be right at that, Willie—but a lot of us old Andrew Jackson Democrats are not too much concerned with long range planning; sometimes we can whomp up a program defending states' rights on a two day notice.

For persons interested in public service, J. J. Wuerthner Jr., General Electric public affairs consultant, has written a book, "Businessman's Guide to Practical Politics." According to Bill, this book has become a primer for almost all programs of this nature.

Businessmen in politics? Why not? It might be the salvation of our political system.

Machine Tool Builders Compete

Any member of the National Machine Tool Builders' Association who has \$5 to spare and a good tearsheet of an ad featuring his product, may put himself in line for a first award or an honorable mention in the NMTBA's 1959 advertising contest. Entries submitted must come within the association's definition of a machine tool, which is not as simple as you might think. A metal cutting machine tool is a power driven machine, not portable by hand, used for the purpose of removing metal in the form of chips. A metal forming machine tool is a power driven machine, not portable by hand, used to press, forge, emboss, hammer, blank or shear metal. This definition of a metal forming machine tool does not include diecasting machines, extruding machines, rolling mills, or welding equipment.

Any firm that can qualify may submit as many entries as desired, at the rate of \$5 per entry. Additional information may be obtained from association

headquarters, 2071 E. 102nd St., Cleveland 6, Ohio. Winners will be announced Oct. 15, and presentation of the award will be made during the fall meeting at White Sulphur Springs, W. Va., Nov. 20.

The bulletin from which we lifted the above information caught our attention because it stirred speculation: Surely the material to be exhibited at White Sulphur as a result of this competition will truly represent national machine tools. Reprinted and bound, the resulting book would be of great value to everyone in metalworking.

Returning for an idle moment to that "not portable by hand" business, maybe a pedantic busybody could lift an eyebrow about it. Ah, well.

Distributors Hail Manufacturers

The Advertising and Awards Committee of the National and Southern Industrial Distributors' Associations was established in 1952, and they have been giving awards every year since to manufacturers who say nice things about distributors. You can make yourself eligible for one of these bronze plaque awards by writing to the Advertising and Awards Committee, 1900 Arch St., Philadelphia 3, Pa. You will receive an awards program; you simply fill it out, and you're in like Flynn—if you have been kind to distributors. This year (in the magazine advertising division), awards were won by Chain Belt Co., Milwaukee; Heller Tool Co., Newcomerstown, Ohio; Republic Steel Corp.'s Pipe Div., Cleveland; and Safety Socket Screw Co., Chicago. Presentations were made early in May down in Dallas.

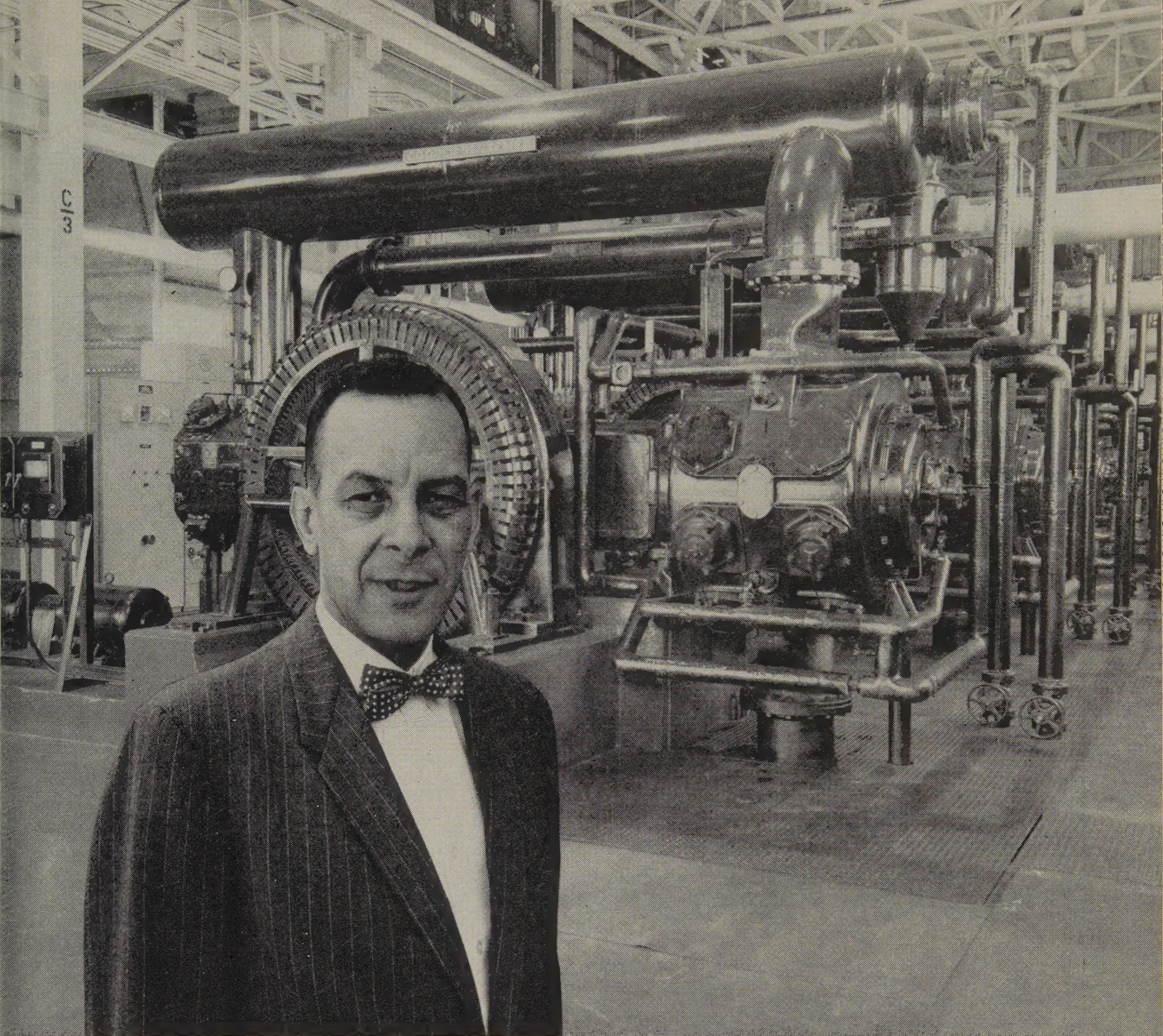
For Offhand Response

If you're going to study history and civics, try this test for fun: 1. Who was Woodrow Wilson's vice president? 2. Who formed the first billion-dollar corporation in this country? 3. What is the Sixteenth Amendment? 4. Name Nevada's two senators. 5. What was the Treaty of Guadalupe Hidalgo? When was Wisconsin admitted to the Union? Indiana? Ohio? Michigan? 7. What President hired a substitute to fight for him during the Civil War? 8. What are you having for supper tonight?

Shradu

(Metalworking Outlook—Page 47)

STEEL



Grover H. Detmer, *Project Engineer,*
The Cooper-Bessemer Corporation, explains...

How Cooper-Bessemer compressors supply air for Ford assembly

Compressed air plays an important part in the production operations of the new Ford assembly plant in Lorain, Ohio. Behind this supply, you'll find four 400 hp Cooper-Bessemer compressors with En-Tronic controls. Housed in the power plant building, these units discharge at 104 lbs. pressure. Mains of 8" size carry the air about 1000 feet to the far ends of the huge plant. Pressure there is 98 lbs. The 5-step capacity controls automatically load the compressors to meet plant demands for air.

The Cooper-Bessemer equipment has been in use constantly since the plant was completed a year ago and have given excellent service.

Cooper-Bessemer M-line compressors for industrial air supply are available in sizes from 200 to 10,000 hp. Write for free copy of Bulletin M-81, "Air for Industry."

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HOT SPOT in your plant?

Chances are 1 in 3 that your plant will have an electrical fire this year. Here's how to guard against it.

In a recent nationwide industrial survey, 29% of the reporting plants had one or more electrical fires during the past two years. Best protection against larger electrical fires? Install a fully-automatic Kidde carbon dioxide fire extinguishing system.

Finest fire protection on the market today, Kidde systems give you 24-hour-a-day protection, act quickly, dependably at the first sign of fire. Kidde systems are pressure-operated, self-contained — need no outside power. Visual indicators show if system is "set" or "released." All parts can be tested without discharging system. No parts to replace after operation or test. All operating parts completely enclosed for safety. Fast, clean carbon dioxide snuffs fire in seconds, then vanishes. Leaves no mess to clean up later, can't harm electrical gear. For more information, write for Kidde's Pressurized Systems booklet today.

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LETTERS TO THE EDITORS

STEEL Boosts Spirit, Ambition

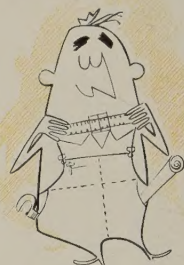
Thank you for including me in your distribution of timely STEEL magazine. I enjoy the completeness and apt material.

A small businessman, due to lack of management, efficiency, and work force, finds himself falling behind the eight ball in completeness. Your magazine gives him a tremendous boost in spirit and ambition to be like the great success portrayed in STEEL.

Herman C. Schiebo

Schiebout Mfg. Co.
Grand Rapids, Mich.

Seeks to Measure Productivity



Please send me a reprint of "Productivity . . . Ways to Measure It," (Apr. 29, p. 47).

I would like to develop some methods for measuring productivity for our plant, and your article was most interesting.

Would you also tell me the address of the National Bureau of Economic Research?

Don L. Geese

Plant Industrial Engineer
Reynolds Metals Co.
Listerhill, Ala.

• The address is 261 Madison Ave., New York 16, N. Y.

This article was most interesting and enlightening. May I have a copy?

A. G. Steven

Plant Superintendent
Ithaca Gun Co. Inc.
Ithaca, N. Y.

Will you send me a copy of this interesting article?

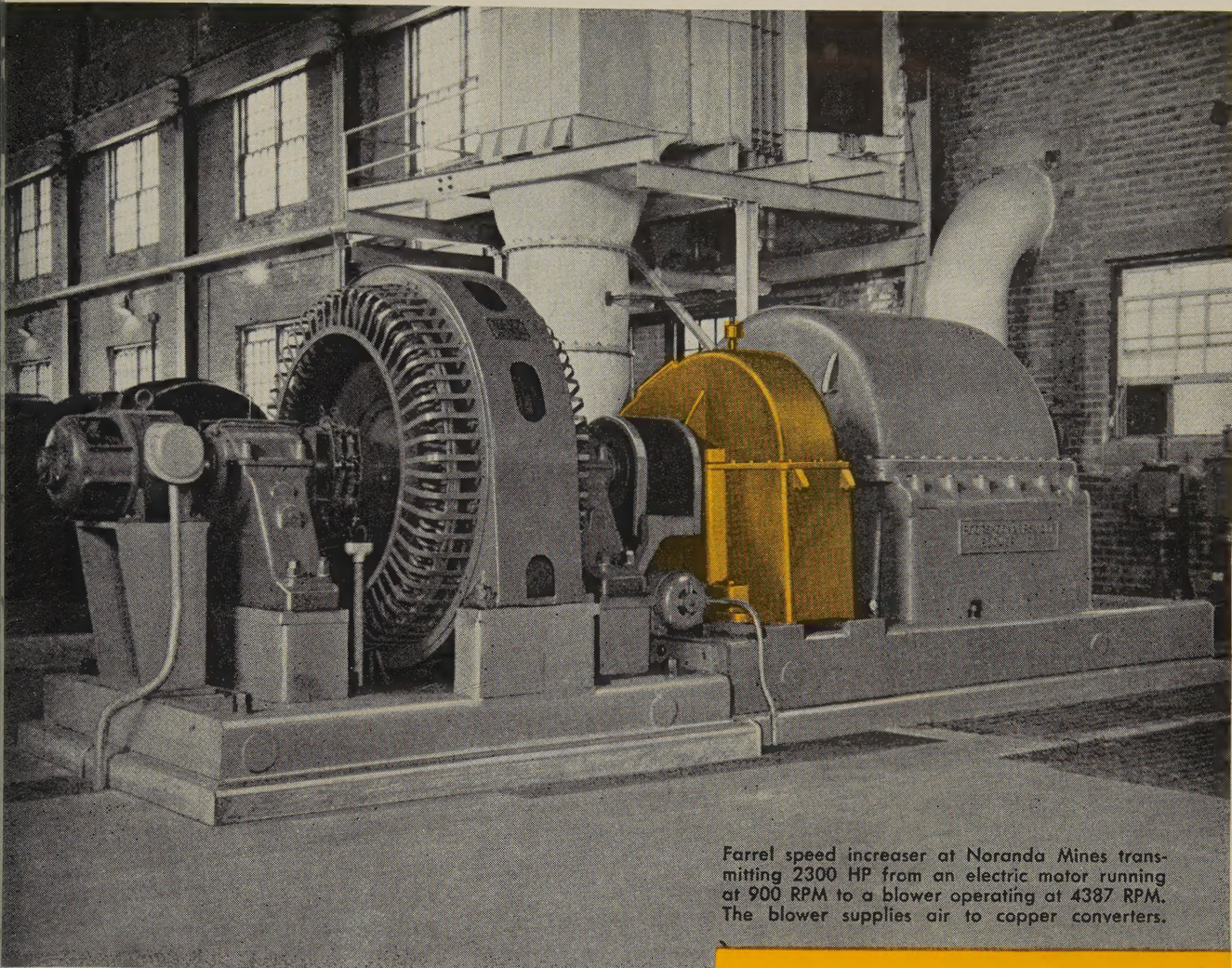
Karl G. Nowa

Factory Superintendent
Fenwal Inc.
Ashland, Mass.

Advocates Bracket System

We have been most interested in the series of articles on depreciation reform.

(Please turn to Page 12)



Farrel speed increaser at Noranda Mines transmitting 2300 HP from an electric motor running at 900 RPM to a blower operating at 4387 RPM. The blower supplies air to copper converters.

“Both speed increasers have given us very satisfactory service”

These are the words of L. O. Cooper, plant engineer for Noranda Mines, Limited, Noranda, Quebec. He is referring to their two Farrel gear units, used to transmit power from electric motors to high-speed blowers.

Farrel gear units have the benefits of sound engineering, skilled workmanship, high quality materials and years of experience in furnishing speed increasing units which have provided “very satisfactory” service for an indefinite period. In fact, since they were first developed in 1932, not one has ever been known to be replaced.

For full details of Farrel speed increasers, send for a copy of bulletin 451.

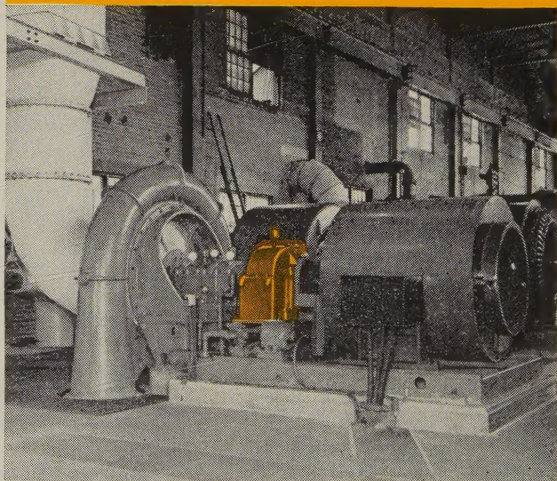
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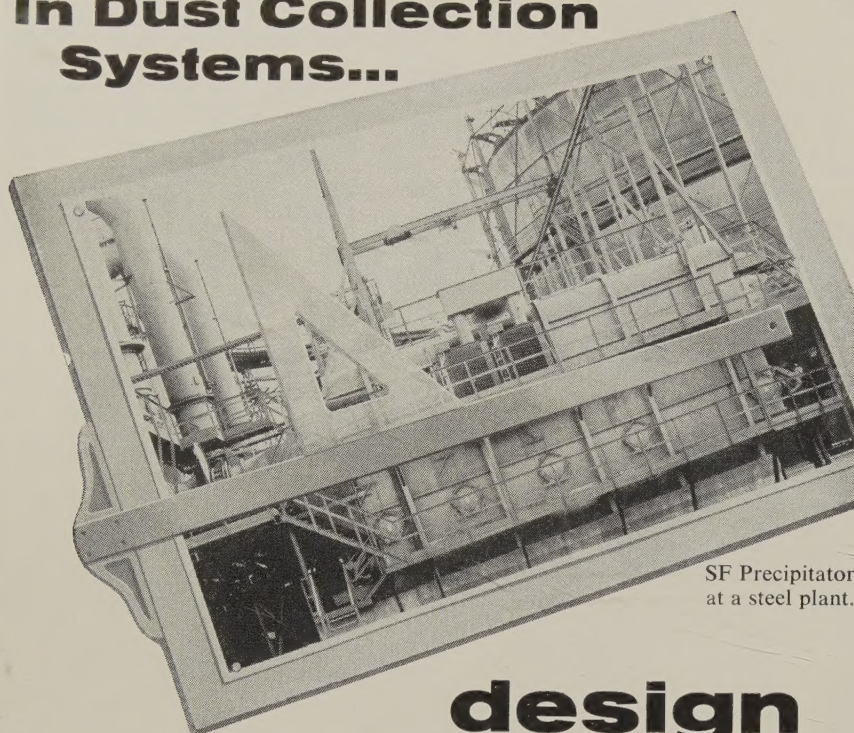


NORANDA MINES, LTD.



This 920 HP unit increases speed from 1450 to 4087 RPM. The blower furnishes secondary air to a copper reverberatory furnace.

In Dust Collection Systems...



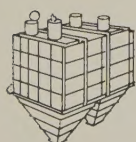
SF Precipitator
at a steel plant.

design makes the difference

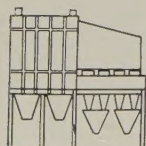
Higher efficiency of Buell 'SF' Electric Precipitators is the result of exclusive engineering features. For example, Buell's *Spiralelectrodes* emit 50% to 100% more electrons than other types... and *maintain* their efficiency. Positive gas flow control through adjustable baffles prevents scouring and eddying. And Buell's Unique Continuous Cycle Rapping practically eliminates "puffing".



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Get full information: write for a copy of "Buell SF Electric Precipitators", a 22-page booklet. Write to Dept. 26-E, Buell Engineering Co., Inc., 123 William Street, New York 38, N. Y.

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Experts at delivering Extra Efficiency in

DUST COLLECTION SYSTEMS

LETTERS

(Concluded from Page 10)

which you have run in recent weeks. And we are desirous of helping in the drive for concerted action which you are spearheading.

In our case, we strongly advocate adoption of the bracket system (Mar. 16, 1966). If the spread of depreciation rates were fairly wide in each bracket, with a maximum at least double that of the highest rate allowed by Bulletin F for the shortest lived item in the category, the following benefits would seem to accrue:

1. Except where an unusual situation would require a rate not in the bracket, there would no longer be the burdensome conferences and litigations over depreciation rates.
2. The uncertainties of government opinions on management financial decision in this area would be eliminated.
3. It would provide a tool for prudent management to tailor its depreciation policy to fit the particular circumstances of realistic obsolescence, manufacturing activity, and expansion goals that it encounters each year.
4. It would materially reduce the expense of keeping records to substantiate taxpayers' useful lives, and government audit time.

Paul L. Smith

Secretary and Treasurer
Bullard Co.
Bridgeport, Conn.

Dear Acton Chance:

Re: The Case of the Vanishing Jobs!
(Apr. 6, p. 99)

Is it possible your investigation is not complete? What is the possibility that jobs have been created by the return of our dollars in export goods? What happens to the dollars we spend outside this country? An article giving facts and figures exposing the return of the dollar should be most interesting.

C. E. Harrington Jr.

Engineer
Dunn Welding Co. Inc.
Buffalo

Binder Area?

Will you send me a copy of "How to Cut Finishing Cost 10 Per Cent" (Mar. 30, p. 44)?

I did not, however, understand the statement, "Do you try to design your die so all breaks or initial draws come in binder areas? Binders must be hard enough to minimize wear."

Will you clarify this for me?

Fred Bohan

Tool Designer
Lawn-Boy Div.
Outboard Marine Corp.
Lamar, Mo.

• "Binder area" is a generic term peculiar to the automotive industry. The binder area is the area of the draw ring face which retards and controls the flow of metal in a die.

mark of a good place to work... REPUBLIC STEEL LOCKERS

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Republic Steel Lockers are *Bond-erized*. This exclusive Republic feature provides a superior base for the baked enamel finish. Offers protection against rust and corrosion . . . restricts bumps, scratches, abrasions of everyday service to the site of the injury. And reduces maintenance costs to a minimum.

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And Republic's Berger Division Planning and Engineering Service will help you with your locker planning. They will recommend the right locker for the job and assume full responsibility for complete installation.

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CALL YOUR REPUBLIC REPRESENTATIVE, OR WRITE...



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☐ Republic Steel Lockers ☐ Wedge-Lock Storage Units
 Please have representative call to discuss:

☐ Materials Handling Equipment ☐ Contract Facilities

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Company _____

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CALENDAR OF MEETINGS

May 17-20, Industrial Heating Equipment Association: Spring meeting, Homestead Hotel, Hot Springs, Va. Association's address: Associations Bldg., Washington 6, D. C. Secretary: Robert E. Fleming.

May 20-22, American Management Association: General management conference, Roosevelt Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. General management division's manager: David J. Secunda.

May 20-22, Electronic Industries Association: Annual meeting, Sheraton Hotel, Chicago. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

May 20-22, Society for Experimental Stress Analysis: Spring meeting, Sheraton-Park Hotel, Washington. Society's address: P. O. Box 168, Cambridge 39, Mass. Secretary-treasurer: W. M. Murray.

May 21-22, National Industrial Conference Board Inc.: General session for all associates and annual meeting, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

May 25-26, Malleable Founders' Society: Annual meeting, Homestead Hotel, Hot Springs, Va. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

May 25-26, Wire Reinforcement Institute Inc.: Annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Institute's address: National Press Bldg., Washington 4, D. C. Managing director: Frank B. Brown.

May 25-27, American Society for Quality Control: Annual meeting and exhibit, Sheraton-Cleveland Hotel and Public Auditorium, Cleveland. Society's address: 161 W. Wisconsin Ave., Milwaukee 3, Wis. Administrative secretary: W. P. Youngclaus Jr.

May 25-28, Design Engineering Show & Conference: Convention Hall, Philadelphia. Information: Clapp & Poliak, 341 Madison Ave., New York 17, N. Y.

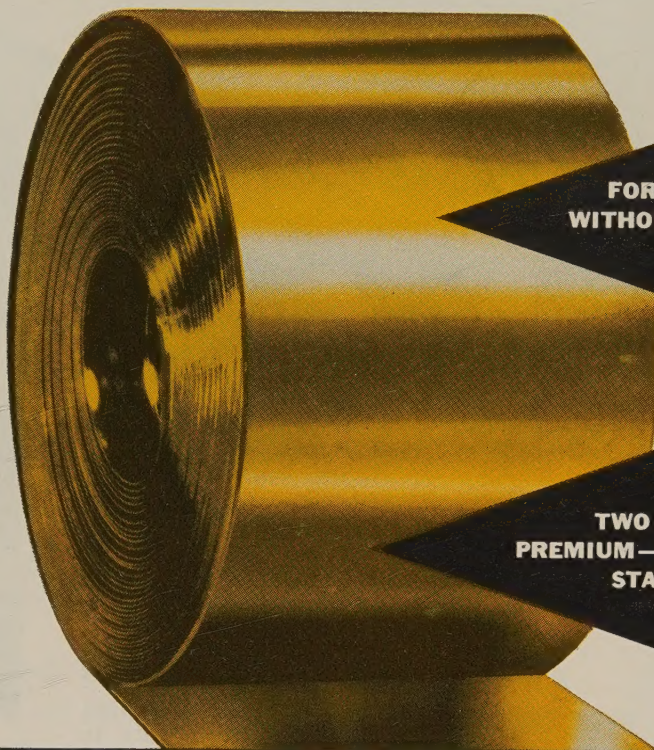
May 25-30, Concrete Reinforcing Steel Institute: Annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Institute's address: 38 S. Dearborn St., Chicago 3, Ill. Managing director: H. C. Delzell.

May 27-28, American Iron & Steel Institute: Annual meeting, Waldorf-Astoria Hotel, New York. Institute's address: 150 E. 42nd St., New York 17, N. Y. Secretary: George S. Rose.

May 27-29, National Fluid Power Association: Spring meeting, Grove Park Inn, Asheville, N. C. Association's address: 1618 Orrington Ave., Evanston, Ill. Executive vice president: Barrett Rogers.

May 18, 1959

NEW PRE-FINISHED BRASS-STEEL SAVES 25% OR MORE ON MATERIAL COSTS



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Where the only BRASS you *need* is the brass you *see*, save 25 percent or more on material costs, reduce production steps with brass-plated steel. This way, the only BRASS you pay for is the substantial brass coating you *really need*. Big 32" wide coils — the widest ever made — in Standard grade, for utility or decorative uses; 24" wide in Premium grade, our finest quality — an economical substitute for pure brass for many applications. Both grades are sealed with BAKEKOTE, a baked resin film. Mar-Not protective coating protects the pre-finished surface during fabrication. Big 24" and 32" wide coils and sheets — bright and satin finishes and crimps. Also stripes in sheets, only.

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Heart of the intricate data processing system at Cape Canaveral is a Potter Magnityper—a high speed electronic printer that decodes raw material... then stores, collates, interprets and prints at 72 *thousand* characters per minute. Lightweight, non-magnetic aluminum is essential to its efficient operation—that's why the Magnityper is made almost completely of Frasse aluminum.

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volving 240,000 workers, began during the period—20 per cent more than a year ago, but less than any other postwar year. Total strike-caused idleness: 4.5 million mandays. About 250 strikes started in March, estimates the Labor Department.

During Second Month of a Steel Strike, Imports Would Hit . . .

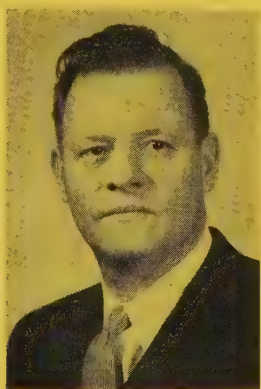
Don't expect steelmakers to grant major contract concessions to avoid a strike—despite the huge inroads foreign steel might make during a walkout. Reason: Steelmen believe a more equitable contract is the key to eventually becoming competitive with foreign producers (Page 55). And much of the foreign steel bought as a strike hedge has been shipped.

**400,000
tons**

Here's an Industry with an Export Boom

U. S. makers of electric, overhead traveling cranes are pushing deeper into world markets, a Commerce Department survey shows. The industry exported \$7.4 million worth of its products last year—a 66 per cent increase over 1957 shipments. Biggest customers: Brazil, Mexico, Chile, and Cuba.

Practical Politics: Solution to Better Business Climates



Management has lost its political effectiveness in its home community, charges Thomas R. Reid, Ford Motor Co.'s director of civic affairs. Result: Our business climate is threatened. It means that practical politics is an important new dimension in your role as a metalworking manager. You want depreciation reform, lower corporate taxes, lower personal income taxes, zoning laws that encourage expansion, local and state governments that encourage industrial growth. You can help yourself achieve some of those goals with a plan of action (Page 99).

CF&I Plans Switch to Oxygen

Colorado Fuel & Iron Corp. is thinking about installing oxygen converters at its Pueblo, Colo., plant, to speed production and bolster capacity. Estimated to cost \$10 million to \$12 million, the financing may be a bank loan, stock issue, or bond issue. Oxygen converters turn out a batch of steel in about an hour vs. 7 to 9 hours with the open hearths CF&I now has at Pueblo.

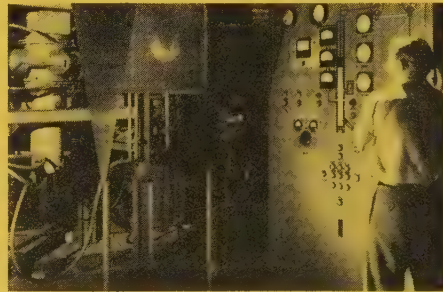
Top Executives Are Scarce

"Never before has there been so keen and anxious a search for men to become company presidents or to join the uppermost echelon of vice presidents . . . and never before have so few men been prepared to fill those posi-

tions," asserts G. Lawton Johnson of Boyden Associates, New York management consulting firm. Keen competition, swift technological change, and generally more complex industrial management have raised the standards for executives and have led companies to look for "professional managers" with judgment developed in a rise through the ranks, he reports. He says you'll be more apt to make the grade if you're alert in conversation, orderly in your thinking, forceful and clear in your speech, and can think on your feet. Volunteering a reasonable sacrifice in your personal life in the interest of your company's welfare also may give you the nod. And having a wife who encourages you in your work and shares your enthusiasm and interest is mighty important, too, he reports.

Rosy Future for Vacuum Melted Steels

Expect buyers of tool steels to demand a wider variety of vacuum arc-melted grades within three years. Many important steel producers go along with such thinking, judging by the activity in the field (Page 64). Premiums may eventually be lowered to attract bigger volumes.



Are Your Machines Outmoded?

Chances are you'll have to answer "yes." If all the machine tools built in the last five years had been applied to replacement needs (none for expansion), we would only have been replacing machines at a rate of once in 33 years. Few machine tools have a profitable productive life half that long. And at the 1958 shipment rate, we would replace machines only once in 62 years. Obviously, the U. S. is not keeping its machine tool equipment up to date. One big reason is inadequate depreciation allowances, points out Frederick V. Geier, chairman, Cincinnati Milling Machine Co.

Reactor Metal Boosts Steel Output



Look for wider use of wash metal in steel-making furnace charges. Removal of silicon and sulfur from hot metal may boost output as much as 15 per cent for open hearths, 50 per cent for electrics. A new process, developed by Diamond Alkali Co., treats molten iron with an alkaline material, iron ore, and oxygen in a rotary reactor. In pilot operation more than a year, it reduced sulfur to 0.03 per cent and silicon to 0.40 (Page 118).

Small Firms Will Lease More Equipment

Expect smaller companies to turn more heavily to leasing of equipment. Originally a big business technique to save liquid cash, leasing is winning popularity polls among small firms today. About \$227 million worth of equipment was on lease at the end of 1958—40 per cent of it to firms with

assets of less than \$500,000. That percentage will probably rise because leasing helps to spur growth, aids modernization, permits 100 per cent financing, and offers tax advantages. Drawback: The gross dollar outlay for leased equipment is usually greater than for purchased equipment.

Fasteners: Make 'em or Buy 'em?

Volume production facilities like the battery of headers (pictured) at Townsend Co., New Brighton, Pa., often give the fastener maker a cost edge, making it cheaper for you to buy fasteners than to make them. Don't be misled into thinking that small parts are a natural way to use your idle capacity—they may turn out to be a luxury. For a clearer view of the fastener production and profit picture, cost out your proposed operation against the checklist on Page 110.



Republic Plans \$375 Million Expansion

Republic Steel Corp. will spend around \$375 million on capital improvements over the next four years. No new plants are involved. The program may include the addition of 300,000 to 400,000 tons of annual capacity to bring one mill into better balance between producing and finishing facilities. The spending timetable: \$55 million this year, \$110 million next year, \$84 million in 1961, \$60 million in 1962, the balance in 1963. The program, largest in Republic's history, will require no outside financing except temporary borrowings.

Washington Notes

The House Ways & Means Committee tentatively voted a four year extension of the Renegotiation Act. (It permits Uncle Sam to recapture "excess" profits on defense contracts.) . . . Don't expect Congressional approval of a Post Office proposal to raise the regular letter rate to 5 cents . . . Steelworker productivity fell 2.9 per cent (not the 6.2 per cent first reported) from 1956 to 1958, estimates the Labor Department.

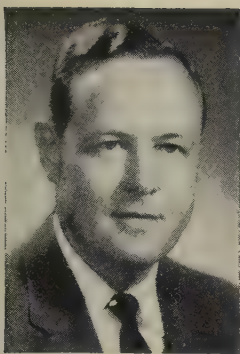
How Congress Will Vote on Antitrust Laws

Odds favor passage of a bill to require premerger notification by large corporations and another to give the Justice Department access to corporate records. But expect the House to kill a measure that would limit the "good faith" defense for price reductions.

Straws in the Wind

Look for more co-operation between the trucking industry and railroads. It will mean better, faster, and maybe cheaper, service to you . . . The farm equipment industry's profit-to-sales ratio climbed to 4.3 last year from 2.9 in 1957 . . . A *Chicago Daily News* survey of steelworkers agrees with an earlier survey by Columnist Sam Lubell: Chicago area workers don't want a strike and aren't excited about a wage increase; most of them would settle for improved pensions and insurance . . . Republic Steel Corp.'s C. M. White says the steel industry may return to second quarter operating levels in the fourth quarter—after a third period dip.





May 18, 1959

What Makes People Tick?

For a long time, you, as a management man in metalworking, have been considered a sort of Dr. Jekyll and Mr. Hyde.

At home, you supposedly are the typical family man who generally reacts emotionally.

At work, you supposedly become another individual, one who deals with business problems unemotionally and rationally.

It's not so! You are the same person at work and at home. You make all your decisions on emotional as well as rational bases.

While this is something you probably have suspected all along, it is confirmed by a motivational research study (STEEL, Apr. 6) made for STEEL's editors by Dr. F. Robert Shoaf of New York University. Here are some of his conclusions about different levels of management:

Company presidents are reflective men with a practical philosophy based upon personal experiences or those of predecessors. They are not too tolerant of the opinions of others in a controversy. They may well be "lonely."

Vice presidents and general managers have attitudes and business values similar to those of presidents, but their personalities are less rigid.

Men in engineering management are objective, moderate in their opinions, and personable. They are less concerned with such things as price and production costs; so their emphasis on maintaining tolerances and rigid specifications is sometimes unrealistic and impractical.

Men in production management are interested in cost cutting and increased production—but more within their own departments. They also figure they can go clear to the top.

Members of purchasing management don't expect to be presidents, but they would like personal recognition as vice presidents. Because of the nature of their job, they have to be tough.

Perhaps none of those descriptions fits you precisely. If not, it is further evidence that people are alike, yet wholly unlike.

The trick in getting along in your job and in life is to develop a better understanding of how people tick—and how you tick yourself!

Irwin H. Such

EDITOR-IN-CHIEF

Unless you buy leaded steels directly from Inland's Indiana Harbor Works, chances are you've never seen this tag. But among Cold Drawers and Steel Warehouse men who process and sell leaded steels in a variety of forms to manufacturers, it is famous.

Every one of them recognize that behind this tag lies years of research, development and *unequaled experience*. Twenty years ago it marked the world's first commercial leaded steel. Today this tag represents the standard of performance by which all other free-machining steels are compared. It signifies LEDLOY* . . . the most machinable leaded steels obtainable.

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?

If we have a 60-day steel strike, steel imports may hit

400,000 tons

in the second month of walkout



IMPORTS will make damaging inroads into domestic markets for steel if steelworkers strike for two months, believes an export department official for a major U. S. steel company.

Here's his analysis:

During the second month of a strike, imports would climb to a record 400,000 tons. (It looks like record monthly average, 240,000 tons, will be set in this year's first half.)

During the first 30 days of a strike, imports would hold at about 40,000 tons because users couldn't give their foreign suppliers enough notice.

The fact that a long walkout could "educate" American users about steel from abroad has U. S. producers worried.

"This is like opening Pandora's box," comments one. "The 400,000 tons expected in a strike's second month could lead to much bigger imports in the years ahead."

Are steelmakers worried enough

about the situation to make major contract concessions on economic issues to keep operating?

No. They think a more equitable contract is the key to eventually becoming competitive with foreign producers. Hourly steel wages in the U. S. are three to eight times those of the major competitors abroad. Paradoxically, American steel may have to take a strike this summer to get more competitive.

● Steel is not readily available from some foreign countries, but all nations will strain to make a little more of the metal for sale to the U. S. just to get the import door open wider.

West Germany is probably in the best position. She's operating at 79 per cent of capacity (in March, but early data show April higher). Other operating figures (all for March): France—100 per cent; Netherlands—109, Belgium—87, Luxembourg—99, Italy—88, Saar—95. First quarter tonnage figures

for ingot output: West Germany—6.9 million in the 1958 period, 5.9 million in 1959; Britain—6.1 million in 1958, 5.2 million in 1959.

● Import inroads into west coast markets, especially by Japan, have been particularly severe.

In 1959's first quarter, west coast imports of steel are estimated to have reached 192,243 net tons, a 99 per cent gain over the first three months of 1958 when the figure was 51,438 tons. Plate imports jumped 1400 per cent between the two quarters, reinforcing bars 216 per cent, tubular products 158 per cent, wire rope 149 per cent, hot-rolled bars 146 per cent. It means that foreign steel mill products have about a 6 per cent slice of the western market. The current national figure is 3.8 per cent.

In 1958, steel imports into west coast ports reached a postwar high of 333,100 tons, or 53 per cent above the 1957 mark. What makes it particularly tough on west coast

How Steel Imports Have Risen

	Imports 1947-49 Average (Net tons)	% of Imports to Domestic Shipments	Imports 1958 (Net tons)	% of Imports to Domestic Shipments
WIRE RODS	6,120	1.1	181,283	20.6
PLAIN WIRE	809	0	133,687	5.7
FENCING	3	0	36,671	23.7
NAILS & STAPLES	1,500	0	201,229	48.6
BARBED WIRE	33	0	59,253	108.0
STEEL PIPE & TUBING	4,922	0.1	200,038	3.4
HOT & COLD ROLLED SHEETS & STRIP	4,782	0.03	25,181	0.12
ALL STEEL PRODUCTS	163,066	0.3	1,702,819	3.0

Source: Pittsburgh Steel Co. and American Iron & Steel Institute.

producers is that the 1958 figures represented more than 18 per cent of all steel shipped into the U. S., while the west coast market accounts for about 10 per cent of the national market.

But Japan will have more trouble than other foreign producers in boosting shipments to us if we have a steel strike. She is trying to catch up with domestic demand that was unsatisfied during walkouts which closed her two biggest mills from Feb. 25 to Apr. 16. They lost some 500,000 net tons of production, and it will be at least June before they make up the deficiency.

• Foreign producers' prices would probably rise during a steel strike, but their quotations will still be under domestic levels.

Japan has already boosted her prices 3 to 8 per cent all along the line. Even so, they're substantially under ours. Here's proof (in San Francisco, per 100 lb): Re-bars are 73 cents lower than the domestic price, or 11.3 per cent under; wire rods are \$2.55 lower, or 31.7 per cent under; butt weld pipe (2 in. standard black) is \$1.98 less, 20 per cent under; 20 penny common nails cost \$3.36 less, a 22.3 per cent advantage.

European producers' prices tell the same story. Barbed wire made by U. S. Steel Corp. in Cleveland and shipped less than 200 miles to Dayton, Ohio, costs about \$40 a ton more than the wire made in Dusseldorf, Germany, and shipped thousands of miles to Dayton. Last May, 100 lb of American common nails could be bought on our eastern seaboard for about \$10.30. European made nails sold in the same area for about \$6.90.

• Most of the foreign made steel is being marketed here by American distributors and would continue to be sold that way during a strike.

Since many of the distributors are small or medium sized, few can afford the gamble of heavy inventories in foreign steel in anticipation of a walkout. They'll have to wait for the firm orders.

American producers think that will tend to keep imports down. And if there's no strike or one that lasts a month or less, they're guessing that imports of mill products will drop steeply in the second half, to bring the year's figure to 1.9 million tons. That's a monthly average for all of 1959 of about 160,000 tons vs. the 240,000 tons (estimate) in the first half.

Sums up the export department official previously cited: "Much of the influx of foreign steel that can be attributed to strike hedging has probably already taken place in the early months of 1959."

• An extra copy of this article and one to run May 25 (listing domestic steel facilities that will still be operating in case of a strike) will be available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Steel Imports Cause Alarm in East

TWO SHIPS churned down the St. Lawrence Seaway and deposited 8700 tons of foreign steel in Buffalo earlier this month. That was the first of 25,000 tons of foreign steel expected to arrive in the city during a 30-day period.

Only 700 tons were finished steel—the rest is to be rerolled by U. S. companies. In Buffalo, finished foreign steel is available in only a few sizes and shapes; angles are prevalent. Prices are reported as low as \$30 a ton below the similar domestic product. Heavy structural, however, don't come at those bargain prices.

• Who Is Worried? — Answer: Nearly everyone.

Local labor unions see fewer steel making jobs in the area.

Buyers of the foreign steel are concerned about the reaction of the public, their unions, and the domestic steelmakers on whom they must rely for the bulk of their needs.

Steel companies face a dilemma. They see part of their market dwindling away, but realize that they will export some steel via the same freighters that bring in the competition. From an international co-operation standpoint, they don't want to oppose the imports. But they don't want to stand idly by while their markets shrink.

Importers, despite their big price edge, report reluctance on the part of some steel users to purchase the foreign material. One marketer anticipates limitations on imports.

The National Association of Manufacturers may be drawn into the picture to help determine policy. A Buffalo executive says he will ask for an NAM opinion.

Spread Work, USW Urges

With 50,000 steelworkers still idle despite record production, the union is plugging for a four day week every fourth week at five days' pay. Industry sticks to its no-cost-hike stand

THE UNITED STEELWORKERS is putting a spread-the-work proposal high on its list of demands to the steel industry.

It was a major subject on the agenda last week as each side's four man team of bargainers met in New York. Probing actions by both management and labor will be going on in all the major areas of dispute for some time. Brass knuckles negotiating won't start much before the end of this month.

USW Proposal—Steelworker President David McDonald's demand is reportedly a four day, 32 hour week every fourth week. The union's 500,000 members in basic steel could maintain the present schedule of five, 8 hour days for three consecutive weeks. In the fourth week, they would work four, 8 hour days under a pay setup designed to give them the same weekly earnings they'd get for five.

The union claims that the plan would cost the companies an added 15 cents an hour in wages. The present pay average is \$3.06 an hour. The average workweek would become 38 hours instead of 40.

The reason for the demand: An estimated 50,000 steelworkers are idle at a time when steel production is setting records. Polls of USW members indicate they're more interested in jobs than higher wages.

Industry Reaction—Industry continues to be against anything that would boost employment costs and, in effect, let in more foreign steel (Page 55), or give competitive materials a break, or push up prices. Both sides are negotiating with the uneasy awareness that a third party may suddenly join them—President Eisenhower—if much more pay-price spiraling looks likely. Industry's basic position continues to be: Keep present wages and fringes for one year but drop the cost of living escalator. Labor's argument: Spread the work, boost wages, and other benefits; they can be financed

out of profits, not higher prices.

- **Strike Ahead**—With that kind of positioning, no wonder a walkout is a good bet when the contract expires June 30. A strike or threat of one may be a more potent weapon for the union now than it was a month ago. Steel inventories aren't building up as rapidly as planned, chiefly because metalworking business is much better than expected.

But all indications are that the steel companies will fight to keep at or near the status quo in employment costs.

- **Speculation**—Last week a lot of words were written about the strategy in case of a strike. They boil to this: If the union decides to walk out, it will probably strike the great bulk of the industry as it always has before. In the un-

likely event that it decides on a divide-and-conquer technique, the industry is considering several defensive tactics, including what airlines did last year: Extra profits of unstruck companies were divided among those that were struck (STEEL, Nov. 10, 1958, p. 69). Steel firms view the plan with little enthusiasm because of legal problems the airlines didn't face.

Both sides have observed the formality of notifying each other that the contract will expire June 30. You can't read into such a move the threat that the steel industry might lock its workers out (as some observers have). You can't use the formality as firm support for speculation that the steel employees will work into the summer without a contract (as some observers have) because Mr. McDonald says: "No contract, no work."

- **Sidelight on Coal**—The steel companies—like independent coal firms—just gave \$2-a-day boosts in their mines. Reporters have been asking: How can they justify the no-raise stand for mill hands? The answer: High productivity which has enabled coal output to keep pace with higher rates.



Left to right are: R. Heath Larry and R. Conrad Cooper of the steel industry's negotiating team and David J. McDonald and Arthur Goldberg of the union's group. Other negotiators are: John H. Morse of Bethlehem Steel Co. and H. C. Lumb of Republic Steel Corp., for industry; Howard Hague and I. W. Abel, for the union



"... the President indicated that the government must keep outside collective bargaining process ..."



"... the top executives should handle the bargaining ..."

What Secretary Mitchell Thinks

EDITORS' NOTE: STEEL visited Labor Secretary James P. Mitchell last week to get his views on several important problems in the labor-management field. He sees the government following an official hands-off policy in the steel talks; he thinks both labor and management show a great deal of statesmanship; he questions the value of a productivity index to wage negotiations; he believes worker ownership plans can be desirable; he thinks much more planning is needed to handle the effects of automation, but that it will build more jobs in the long run. Here are STEEL's questions and Secretary Mitchell's answers:

In view of world conditions, the state of the economy, and the need to maintain a formidable defense posture, does the government have an official position on major threatening walkouts this year, such as in steel?

"In response to a question on the government's position in the coming steel industry negotiations, President Eisenhower indicated that the government must keep outside the process of collective bargaining. I agree fully. The government's role is to provide a legal framework in which labor-management relations can operate. The free process of collective bargaining, within this framework, is the responsibility of labor and management."

Can the government do anything to assure more statesmanship on both sides in a labor dispute that affects the whole economy?

"I'm not sure the government needs to do anything more to assure statesmanship. It's my conviction that the parties to negotiations which affect the whole economy have a vivid awareness of the third interest present at the bargaining table. I am sure the public interest will be respected by the negotiators in the steel industry and

in any other major negotiations. The policy of this administration in leaving negotiations to the parties to the contracts has already done a great deal to increase a labor-management sense of responsibility."

Do you see any signs of increasing "statesmanship" by either side?

"I do. In this country, some 125,000 collective bargaining contracts are in effect. Thousands are negotiated each year. Better than 90 per cent are arrived at peacefully. The record of labor relations in the last six years is a good one—there has never been in our recent peacetime history a period in which so small a percentage of our total worktime was lost due to strikes ... I think it reflects the steady progress we have been making. It implies a growing recognition of the public interest involved in bargaining."

Looking ahead to the '60s and '70s, do you see the labor leader



... I question the value of (a productivity) index to labor-management relations . . ."

"... in the long run, automation builds more jobs . . ."

About 1959 Labor Issues

and industrial relations executives of those times possessing particular characteristics different from those of today?

"In general, I believe the labor leaders and business leaders of the 1960s and '70s will not need training or ability much different from their 1959 counterparts . . . Labor and management are starting to get together away from the bargaining table—to exchange ideas on a wide range of topics apart from those taken up in negotiations—and I think this interaction should, and will, continue . . . (But) too many companies relegate their bargaining duties to a legal assistant or a man far removed from the top policy staff of the organization. It's time they realize that their labor-management relations are just as important to their success as sales or production. The top executives should handle the bargaining and should talk ideas and viewpoints . . . (then) technicians can draw up a written agreement."

Can the government (perhaps the Bureau of Labor Statistics) come up with a widely recognized productivity index similar to the price index or the Federal Reserve Board's industrial production index?

"The consumer price index has many years' experience behind it, and the BLS, because of efforts of past years, is able to produce estimates and totals. The nationwide productivity index we now have is still in its infancy, and all the wrinkles haven't been worked out of it yet. The basic data needed . . . are not yet as complete as the experts would like. I question the value of such an index to labor-management relations, though. The nationwide index gives a picture of the position of the over-all economy—an averaging out of what may be substantial rises in some areas and losses in others. It has value in making comparisons on the national level . . . but its use in bargaining . . . seems . . . minor."

Do you believe output per man-hour is a fair measure of productivity?

"There are various ways of measuring productivity. Output per man-hour is one method; output per unit of capital investment is another; and output per unit of capital investment plus manhours is still another. No one method can be called best. Whatever system is used depends upon the purpose you have in mind. If you were analyzing total costs, you would need all three. If you were working to get a picture of labor requirements, you would find the output per manhour method more suitable."

What other factors should be considered in measuring productivity?

"The factor I just mentioned—units of capital investment—is probably what you have in mind . . . To find out if one individual is doing more or less today than he did yesterday with the same machine, the output per manhour method is fine. If he now has a new machine, the analysis would be of the economic value of the product that comes off the new machine compared with the old. To do this, you

must weigh the output per man-hour with other factors of changed investment and costs of operation."

Do you have any opinions about "people's capitalism" as expressed by some industrial leaders in profit sharing, stock option plans for production workers, and savings plans where the company contributes to an employee's savings account?

"In my opinion, broad based corporate ownership is, in general, a desirable thing. I don't think it matters a great deal what form the distribution of ownership takes—profit sharing, stock option plans, or something else—but it is another step in strengthening democracy through removing economic distinctions between groups . . . these worker ownership plans are an excellent answer to the vicious picture of American life painted by the Communist propagandists. Whether a particular stock option or profit sharing plan is desirable from the standpoint of the employer or the workers depends upon the facts in any particular case."

Are any of us—government, management, labor—doing enough about preparing the country for the "age of automation"?

"We are not doing all that should be done. We need much more planning to handle the effects automation will have in a few years. Communities must be prepared for the changes in manpower requirements of the industries in their areas and must take steps to attract new industries and employment opportunities to pick up the slack created by increasing mechanization. In the long run, automation builds more jobs—but in different trades, and often in different localities. These dislocations should be thought through in advance by management, labor, and the community, so that transitions . . . will be as smooth as possible. Management and labor have often neglected positive aspects of manpower needs . . . As the complexity of the machinery grows, the skills and training needed to operate these machines grow too. Shortages in some occupations exist today. These shortages will become more acute if the coming manpower needs aren't analyzed carefully and steps taken to provide the men who will be needed."

Brass Sales Do About-Face

BRASS MILL shipments are on the rebound, reversing a downward sales spiral which began in 1955 and continued through last year. That's the consensus among the more than 125 top level brass mill executives who attended the 37th annual meeting of the Copper & Brass Research Association meeting in Hot Springs, Va., last week.

Figures show a sharp rise in first quarter shipments. Officials believe sales will continue at an improved pace over the remainder of the year, but caution that it's still too early to accurately predict if the trend will continue.

• **Ailments**—The industry pulse is still erratic. Industry people point out that copper and brass fabricators' return on investment now averages only about 6 per cent. Equally significant: Per capita brass mill shipments have slumped in recent years because of zooming imports and increased competition from other materials.

Look at these examples of spiraling imports: Foreign brass tube producers stepped up shipments to the U. S. from 300,000 lb to 33.5 million lb between 1949 and 1958. In the same period, copper tube imports grew from less than 500,000 lb to over 46 million lb. Between 1956 and 1958, sheet copper imports jumped from 17 million lb to almost 38 million lb. Foreign brass mill goods now account for 20.6 per cent of U. S. usage mainly because domestic wages have risen 80 per cent in the last ten years, making it possible for foreign producers to bring in items at a lower cost.

The industry believes its best formula for long term improvement and growth lies in this direction: "Sensible" tariff barriers to hold down the flood of imports, stepped up advertising, sales promotion, and market research programs with the twin goals of new product development and recovery of certain markets which have fallen victim to other materials—principally aluminum.

• **Enough Metal**—In the years ahead, the brass mill industry prob-

ably won't be plagued by the troublesome copper shortages of the past. That's the good news relayed to delegates by Simon D. Strauss, vice president-sales for American Smelting & Refining Co. Mr. Strauss also reported that extreme fluctuations in copper prices probably won't be so violent in the future. Reason: New mines coming into production which may hike Free World copper output to 3.1 million tons by next year.

Scrap Research Proposed

Committees of the American Iron & Steel Institute and Institute of Scrap Iron & Steel Inc. are considering a long term research study aimed at improving scrap quality and increasing the efficiency of its use.

Battelle Memorial Institute, Columbus, Ohio, would conduct the study.

Opens New Testing Plant

New and expanded heat treating facilities for experimental and pilot plant operations were opened last week at Electric Furnace Co., Salem, Ohio.

In the new 80 by 180 ft building adjacent to Electric Furnace' main plant, studies will be made of continuous and batch heat treating equipment, special protective atmosphere facilities, and industrial furnace metallurgical and chemical problems.

One bay of the building houses a production size, continuous roller hearth, strip line which can process coiled strip up to 26 in. wide. With the pilot plant model, Electric Furnace can make production studies of heat absorption rates of different strip surfaces, annealing, and normalizing and soaking temperatures.

Besides a number of small experimental furnaces, the research plant also contains a new continuous vacuum furnace, introduced by Electric Furnace in March for production heat treating of tantalum, titanium, zirconium, high carbon and stainless steel strip.

In addition to the pilot models for production studies, the facilities also contain laboratories for quality control analysis and a darkroom for processing photomicrographs. The research facilities are available to metal producers and processors for test and development work.

Coal Industry Sees Good Years Ahead

OPTIMISM was evident at the American Mining Congress' Coal Show in Cleveland last week. Booths were busy, and enthusiasm was high. "This is the best show we've had in several years," declared a sales manager.

Exhibitors queried by STEEL predicted a definite business upturn this year. Heavy equipment makers estimated a 10 to 30 per cent improvement over 1958. Underground mining equipment manufacturers weren't that optimistic, but nobody registered pessimism. "We'll be up, but I doubt if we'll make 10 per cent," mused a company official.

Good Years Ahead — Numerous conventioners foresaw an upswing in the coal industry. Equipment people reasoned that the needs of a rapidly expanding population combined with more automation in the industry would boost sales. Heavy equipment firms proclaimed federal road building projects would help their sales.

Several new pieces of equipment caught the miners' fancy. LeTourneau-Westhouse Co., Peoria, Ill., showed its mammoth Model 80 haulpak. Capacity: 80 tons. Top speed: 40 mph. The truck is capable of carrying enough coal to fill over one and a half standard 50 ton railroad hopper cars. Joy Mfg. Co., Pittsburgh, introduced a remote control operation of its Twin Borer which enables the operator to direct the machine from as far as 50 ft away. Several companies unveiled low seam continuous mining equipment with new refinements.

Sidelight: German mining equipment attracted much traffic.

ASMA Elects Officers

New officers of American Supply Machinery Manufacturers Association: President, Fred C. Emerson of Spartan Saw Works Inc., Springfield, Mass.; first vice president, Samuel D. Conant of Jacobs Mfg. Co., West Hartford, Conn.; second vice president, Paul A. Johnson of Drake Corp., Grand Haven, Mich.



Castings Take Airline Job

GIANT malleable castings will be used in supporting structures of the \$8 million terminal Pan American World Airways is putting up at New York's International Airport.

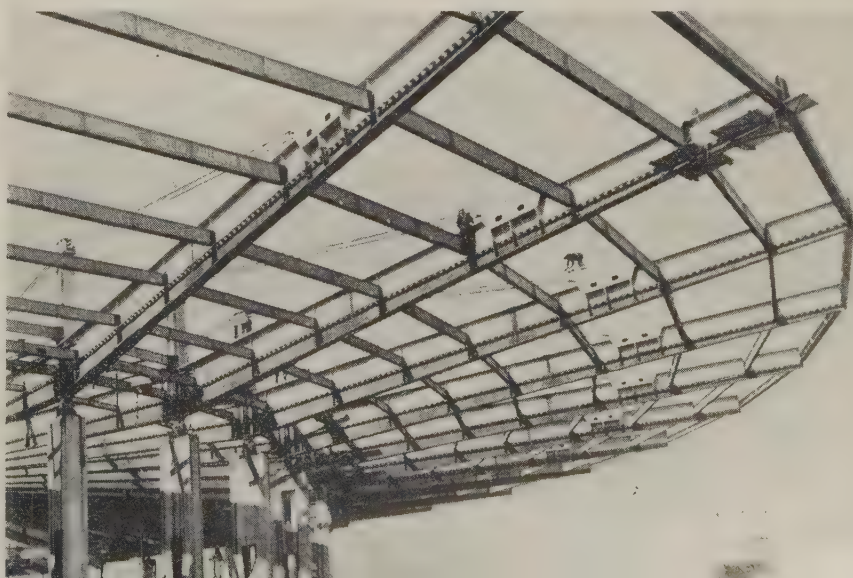
The terminal's reinforced concrete, cantilever roof will cover the passenger and freight terminal and an airliner size parking area where planes will unload. The terminal was designed by Tippetts-Abbett - McCarthy - Stratton, New York.

Sets of four malleable castings are mounted on 32 concrete columns (above) supporting roof and canopy. In each set, the two bottom

castings weigh 725 lb apiece; the center casting weighs 660 lb; and the top one weighs 550 lb. They are the largest structural castings ever produced for this use by Lehigh Foundries Co., Easton, Pa. ASTM Grade 35018 ferritic malleable went into them.

They were annealed in 30 hours to Bhn 160.

The 4 acre roof skeleton (below) provides a canopy 114 ft deep. Under the "umbrella," fabricated by Lehigh Structural Steel Co., Allentown, Pa., a fully loaded airliner can be unloaded every 15 minutes.



Here's Small Company



1. Don't expect to bat 1000. A 500 batting average is better than normal.
2. Be prepared to be surprised. Sometimes what looks hot on the drawing board fizzles out in the market. A less exciting project may prove to be a bonanza.
3. Give a new product a fair trial. Often it takes several years for a good moneymaker to catch on.
4. Make sure that a contemplated new product is better

Market Forge Pins Growth on R&D

PRODUCT research and development is an important growth tool for any size company.

That's the philosophy of Market Forge Co., Everett, Mass. (Employment: About 300.) It rode out turbulent financial weather with an R&D program that fits its objectives.

- **Stormy Waters**—Ten years ago, Market Forge was floundering in the postwar buyers' market. Heavy wartime capital investments and an expanded work force made it difficult for the company to look with composure at the widely fluctuating demand for its shelving and hospital equipment.

To turn the tide, President Leo Beckwith departed from the company's 50 year tradition of being a job shop and set out to make it a full scale manufacturer. The building of a research and development department was part of the move.

Here's the company's concept of how R&D should operate: It works along preplan lines. Man-

agement determines what products customers want by contacting salesmen, customers, ultimate users, and distributors. If a project looks feasible, it is turned over to R&D.

Research people are handed only "really tough problems." Says Mr. Beckwith: "If the problem is easy, anyone can solve it. If it's tough and we crack it, we know we have something good."

- **Find Out What's Needed**—Look at this step-by-step playback of how Medi-Prep, a new product for hospitals, was developed.

By observing activities in a local hospital, the company found that nurses seemed to spend needless time in preparing and dispensing medicines. Other nursing duties suffered.

Market Forge engineers worked with a management consulting firm on time studies of nursing activities in Boston area hospitals. The flow chart showed a great waste of time. Some simple functions required 15 separate operations. Proper layout

could eliminate 11 or 12 of them. The study showed that facilities required in storing and preparing medications included several separate units, often some distance apart. For instance: A work counter would be in one room, a sink in the next, the medications in a wall cabinet in the same room with the work counter (but not necessarily near it). Narcotics would be locked in a nurse's drawer. Some bottles were kept in a refrigerator in the diet kitchen down in the corner (in some instances, on a different floor).

Conclusion: Nurses spent more time moving from one place to another than they did preparing medications. Routine was interrupted by contact with other people while en route, decreasing efficiency.

Market Forge's product development engineers set out to solve the problems by incorporating all the facilities required for medical storage and preparation in one stainless steel unit. The Medi-Prep contains a narcotics cabinet, tiered

Blueprint for Product R&D

than, and different from, any existing product it will compete with.

5. Smaller companies should put R&D under the chief sales executive. He'll have a good idea of what will and what won't go on the market. If experience tells him a product hasn't a chance of catching on, months of researching in some cases can be avoided.
6. Give a new product the benefit of solid marketing study and strategy, including pricing, merchandising, distribution, and promotion.

medicine shelves arranged so most medicines are within sight and reach, a 4 cu ft refrigerator for storing biologicals, a sink, waste container, and syringe drawer.

Sales of the \$1500 item have spiraled. Company officials say many hospitals have purchased it in the strength of direct mail pieces alone.

An automobile back rest designed to minimize driving fatigue and backache is another example of how Market Forge put R&D to work. It was developed through the joint efforts of R&D men and orthopedists. Before its introduction on the market, several taxicab companies tested it.

Growth — The company's first proprietary product which showed real potential was the steam pressure cooker. For many years, Market Forge made one which was marketed by another firm. In 1948, management decided that the product area was ripe for exploitation. R&D people came up with a series of new approaches to steam cookers. By 1951, sales were booming. Another example: Market research studies showed consumers that luggage carriers (the type which is mounted on the top) were

unattractive; they were costly to manufacture and difficult for consumers to assemble. Market Forge's R&D department developed a method of making carrier crossbars with one piece of embossed, 20 gage steel instead of 11 gage. Costs were substantially reduced, and the product was stronger and more appealing to the eye.

• **How Successful?**—The company claims to be the country's largest manufacturer of top carriers and one of the two largest producers of commercial steam cookers. Unlike most firms, Market Forge did not have a recession. Sales have climbed every year since 1948. In the last five years, the firm has tripled its annual volume (presently \$6 million).

Mr. Beckwith credits effective use of research and development. "If a company finds products that are really needed, designs and manufactures them better than anyone else, then it is sure to grow."

He ridicules the notion that R&D is only for the corporate Atlas. "Too many smaller companies have been intimidated by the fact that larger corporations can devote more money to research and development. This is a needless kind of

fear. In most instances, the larger and smaller companies do not operate in competitive areas."

• **Danger Ahead**—But a superior product is not a guarantee of success. Mr. Beckwith feels that too many companies put an unrealistic premium on the apparent security of a patent. They peg the price as high as the traffic will bear in the hope of amortizing capital investments long before the bubble bursts. Too often, patents do not prevent competition from moving in with a lower priced product.

"We price our goods as low as good design and sound profit planning allow," he says. "We are in no hurry to amortize our investment. We make sure our new product decisions are the right ones. Then we put our minds at ease. With a really low price, we are able to get a solid grip on the market. Anyone else who wants to jump on the bandwagon is going to have to run awfully fast to catch up."

Scovill Opens Tube Mills

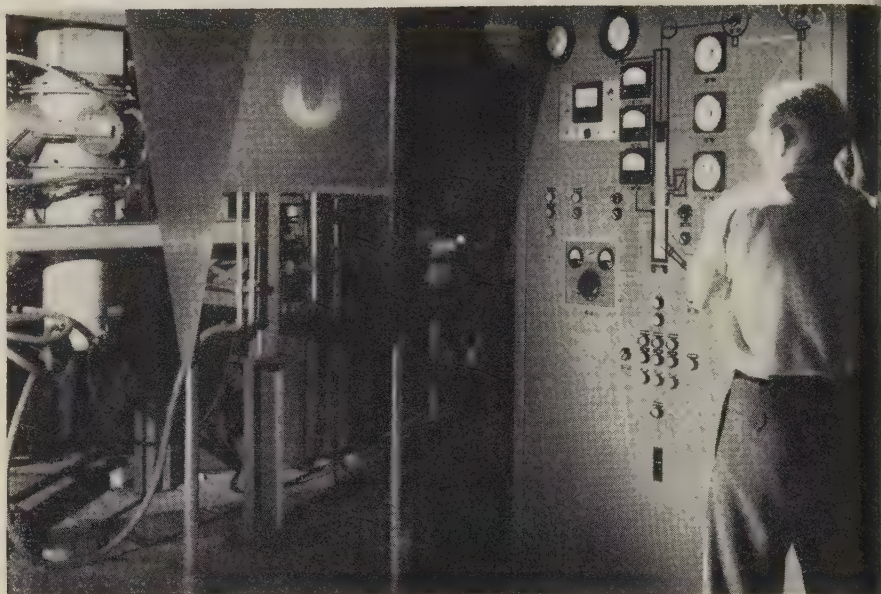
Scovill Mfg. Co., Waterbury, Conn., officially opened its \$10 million tube mills in New Milford, Conn. The new facilities will permit extension of its product line to include copper tube and pipe for plumbing, heating, and air conditioning applications. In the heat exchanger tube line, lengths up to 100 ft can be furnished from New Milford, compared with 40 ft from the former Waterbury tube mill. The firm's general commercial brass alloy tube is continued and augmented to fill requirements where fine surface finishes and close tolerances are of primary importance.

Chromalloy Ups Capacity

Chromalloy Corp., White Plains, N. Y., boosted production capacity by about 30 per cent with the addition of furnace, mixing, and retort equipment; a battery of high temperature controls; and a complete compound preparation unit. The firm's patented process is a method of increasing the heat, wear, and corrosion resistance of metal parts by a diffusion of chromium and other elements into the surface.

Cost Breakthrough for Vacuum Steel?

Producers try to trim expenses and meet expected demand with furnaces two to four times larger, more efficient handling, wider range of grades



Latest General Electric design for vacuum arc furnace has a quick change mold (bottom left), steam ejection. Since there's no treelike superstructure, operations are streamlined

"TOOL STEEL buyers are going to demand a wide variety of vacuum arc melted grades within the next three years," says Arthur E. Johnson, chief engineer, Elkhorn Plant, A. O. Smith Corp., Milwaukee.

"The performance of some vacuum melted grades is going to impress tool and specialty steel buyers," says L. W. Johnson, product and process development engineer, General Electric Co., Shelbyville, Ind. "The evidence points to increasing interest in wider selections."

A STEEL survey of steel producers reveals widely divergent reactions to those opinions. Responses range from skepticism to outright endorsement.

One of the "big three" producers told STEEL that its present melting capacity is going "like a house afire." It expects to increase capacity within a few months.

- Activity in the field lends support to the contention that such steels have a potent future.

Consider these developments: In

the last six months, U. S. Steel Corp. has entered the market place with a 32 in. furnace which melts a 12 ton ingot. And it's planning a 44 in. installation. Bethlehem Steel Corp., on the fence so far, is expected to make up its mind on two 30 in. furnaces. Both Latrobe Steel Co. and Vanadium-Alloys Steel Co., Latrobe, Pa., have just opened sizable additions.

Most producers agree that high performance steels will probably be vacuum grades. Kenneth Iverson, sales manager, Cannon-Muskegon Corp., Muskegon, Mich., says, "Most high grade steels will probably be made by vacuum arc within ten years." A few, like Crucible Steel Co. of America, Pittsburgh, estimate only 2 per cent of all high grade alloys will be made that way.

Furnace builders report bids on or construction of 40 in. and 60 or 65 in. designs. One is sketching a proposal for an 80 in. furnace to handle rotors for giant steam turbines.

Says Lectromelt Furnace Div., McGraw Edison Co., Pittsburgh: "The industry has had a wide-

spread misconception that vacuum arc melting adds a prohibitive premium to production costs. Recent developments show it's economical and consistently effective when handled by competent melters."

- Today's pricing structure reflects the neophyte status of the industry.

Many producers, especially those who melt titanium and zirconium, report they produce alloy steels on a bid or contract basis at 40 to 50 cents (premium) a pound. Some of the larger producers, who are primarily interested in steel, get considerably less as a premium (20 to 25 cents, depending on the alloy).

Experts say the wide range is due to the equipment and experience of the producers. An efficient furnace means a low price and could be the reason behind cries of "cut-throat."

Both design and size contribute to efficiency. Some of the newer designs enable one man to operate two large furnaces. Ingot handling convenience is another element in

owntime. Today's melting costs range from 25 cents a pound to as low as 4 cents. One furnacemaker claims he'll chop more off that.

Not all steel alloys can be vacuum melted efficiently.

Some types, like A-286, can only be made in a vacuum. But of those grades that can be handled that way, the producer has a built-in bonus: Increased yield. Take some grades of stainless. Crop loss in vacuum melting and processing could be 35 per cent. Casting the air melt as an electrode and remelting can cut that to less than 15 per cent.

Result: The producer has one-third more stainless for sale from the same raw materials. At \$1000 a ton (warehouse price), that means an extra \$300 is available to justify vacuum remelting. That's 15 cents a pound—more than enough to attract a producer who is anxious about costs.

In certain grades then, a producer may vacuum melt and offer the product for no other reason than plant efficiency. Such experience can lead to availability of a wider range of steels.

One major producer is expanding rapidly in vacuum melted carbon steels, particularly the low alloy grades. His major customers are aircraft and missile makers, but he feels other industries will become interested once they learn the benefits.

You must balance cost knowledge with a broad outlook.

Although a melting cost of 4 cents appears unreasonably low to some producers (one cried "silly"), there are those who readily admit that present costs might drop to 10 or 15 cents a pound (premium) when larger, more efficient furnaces are available. In any case, it is well to remember that the 4 cents presents bare melting costs; it doesn't include the extensive promotion which must be justified on heavier tonnage. And don't forget that the initial investment is high: A 40 in. furnace costs around \$100,000.

But the implication seems clear: Once initial investments and know-how problems are cleared up, and the volume increases, the price could decline.

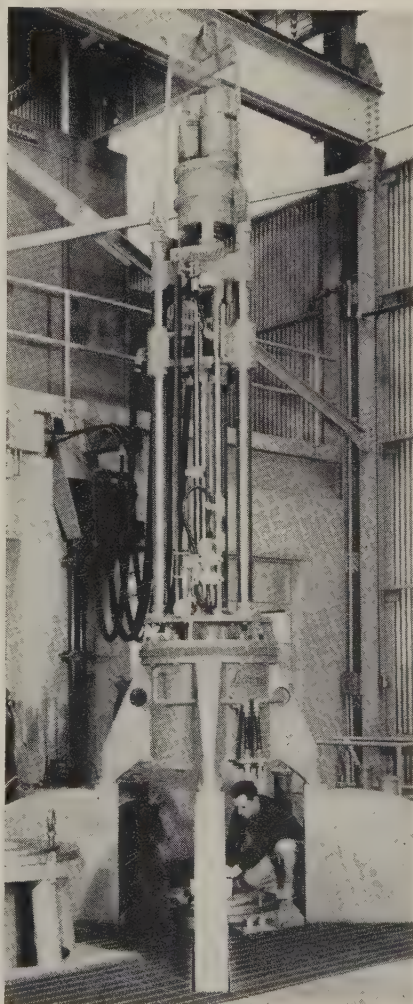
Latrobe Installs Vacuum Arc Furnace

A CONSUMABLE electrode, vacuum arc furnace has started full production of tool steels and superalloys for Space Age applications at Latrobe Steel Co., Latrobe, Pa.

The unit was installed by Lectromelt Furnace Div., McGraw-Edison Co., Pittsburgh, in a new building which will house Latrobe's vacuum melting department. Two more furnaces will go in later.

- Furnace height is held to a minimum with large diameter crucible and electrodes.

The unit remelts electrodes 16 in. in diameter in a 20 in. crucible, producing ingots as large as 8500 lb. An 8 ft ingot is produced from an electrode about 12½ ft long.



Electrode and crucible go into place. Downtime between melts: Only 20 minutes

Low over-all height keeps all operations on one level. The furnace is operated by two men; two units, side by side, would need three.

- Pilot plant operations provided experience in vacuum melting and preparation of electrodes.

J. E. Workman, executive vice president, notes that the pilot plant, producing 600 lb ingots, was in operation more than two years. It produced limited tonnage for Latrobe's customers and provided valuable training for personnel.

Technicians had little difficulty changing over from the pilot unit to the newly installed furnace, says R. T. Eakin, vice president-operations. The first melt was made only a few hours after final inspection.

Nuclear Tester Developed

Plutonium 239 is being used to measure the moisture content of molding sand at GM's Central Foundry Div. plant in Danville, Ill. The technique utilizes fast neutrons emitted from 32 grams of plutonium mixed with beryllium powder and sealed in a stainless steel capsule. Fast neutrons collide with hydrogen nuclei in water atoms in the sand, producing slow neutrons that can be counted electronically. The number of slow neutrons is directly proportional to moisture content.

"This new sand moisture gage has substantially improved our ability to make sand molds of uniformly high quality. It permits us to maintain a more exact moisture content and is expected to correct a variety of foundry problems," declares James H. Smith, Central Foundry's general manager.

Before the nuclear device was installed, moisture control depended on an experienced operator's hand test or "feel" of the sand. The new gaging is almost entirely automatic. The neutron source pellet is lowered into the center of each 3200 lb hopper of molding sand through a stainless steel tube. Two neutron detectors in the tube count the hydrogen nuclei in about 45 seconds.

Moisture content is indicated on a dial which also shows quantity of water needed. The muller operator pushes a button to drop the sand from hopper to muller. With a second button, he meters the desired amount of water into the muller.



More Aid for Small Business Investors?

LOOK for Congress to amend the Small Business Investment Act, passed last year (STEEL, Sept. 15, 1958, p. 107). Object: Make it easier for investment companies to be formed. Main target of the small business enthusiasts: Bigger profits for the investment companies, so they, in turn, will help more small firms.

Wendell Barnes, small business administrator, last week reported to Rep. Joe Evins's (D., Tenn.) Small Business Subcommittee: 1. SBA has received 67 investment company proposals of organization under the act. 2. It has approved 34. 3. Only three investment companies have completed all the organizational work and issued licenses. 4. Fifteen proposals have had to be revised to meet the act's standards. 5. SBA is reviewing 15 more proposals. (Between the time SBA approves a proposal and a license is issued, the organizers clear with the Securities & Exchange Commission, the Federal Reserve Board, and the Internal Revenue Service—and secure their state charters.)

Mr. Barnes was, in essence, replying to criticism by Rep. Wright Patman (D., Tex.) that his agency has been moving too slowly. Congressman Evins referred to charges of "red tape" received by his subcommittee against the administration of the act. Mr. Barnes claimed: "Our experience to date, or rather the lack of it, does not justify the recommendation of any major change" in the act.

How Should the Act Be Changed?

Mr. Barnes did offer some minor changes. First, he wants to eliminate the requirement that small firms receiving equity capital from an investment company must purchase stock in that company equal to 3 to 5 per cent of the capital provided. Secondly, he thinks investment companies should be able to finance small firms through other means than convertible debentures or loans (as now restricted by the act). Common stock, for example, should be acceptable. And he wants small business investment companies to be allowed to make more long term loans.

Association Wants Extensive Changes

The National Association of Small Business Investment companies asks for several major amendments: 1. A flexible interest rate on funds advanced by SBI to SBI companies (based on costs of the money in SBA). 2. Loans to SBI companies without regard to their ability to obtain financing elsewhere.

Thomas Grant Jr., president of the association (and a North Carolina banker), reports interest in the SBI program is decreasing. He thinks some tax changes are needed, too.

Sen. John Sparkman (D., Ala.) has a bill calling for the exemption of SBI companies from accumulated earnings taxes where their earnings are reinvested. Mr. Grant backs this, too. Meanwhile, Representative Patman appears to be doing an end run around the act by calling for the creation of a Small Business Capital Bank System (H.R. 6594) "to increase the availability of capital" to small outfits.

Nickel-Cobalt Hassle Back Again

Don't ever expect Rep. Jack Brooks (D., Tex.) to let go of an issue once he really has his teeth in it. He is after Freeport Sulphur Co. again. This time, though, the Louisiana Congressional delegation thinks he is going too far: Freeport's refinery for nickel and cobalt from Moa Bay, Cuba, is located at Braithwaite, La. and will provide 560 jobs in Rep. F. E. Hebert's (D., La.) district. Charges Representative Brooks: Freeport bought the \$6 million, government built plant for \$200,000 and stuck Uncle Sam with the obligation to buy \$248 million worth of nickel and cobalt, while the nickel shortage is over and poor Sam has cobalt running out his ears.

Rep. Gracie Pfof (D., Idaho) says Idaho's Calera mine is about to go out of business because Uncle Sam won't pop with a cobalt contract. She wants to know why Calera gets nothing when it'll meet Freeport's price of \$2 a pound.

Freeport's Case

Congressman Hebert reported Freeport bought the Louisiana plant in open bidding against 18 other firms. He noted, too, that Freeport had originally advised the government not to build the plant because Freeport had already perfected the process in its own privately financed pilot plant. Argued Charles Wight, Freeport's prexy: Moa Bay involves no government loan. Unless production is put to the government under the contract's provisions, Uncle Sam may never have to buy any of the nickel and cobalt. If he does have to buy, it will be at 74 cents a pound for nickel and \$2 a pound for cobalt (the market price at the time the contract was signed in 1957), which compares favorably to contracts the government has joined at prices as high as \$1.44 a pound for nickel and \$2.60 a pound for cobalt.

Foundry Equipppers Can Smile Again

FOUNDRIES will ship more castings this year. Will that stir them to buy much more equipment?

The best gage of what's happening so far is the Foundry Equipment Manufacturers' Association index (see graph), representing one of the industry's best first quarters since Korea.

These firms watched bookings climb from 30 per cent to 157 per cent through the first quarter, over the year ago period: C. V. Nass, general manager of Beardsley & Barber Div., Pettibone Mulliken Corp., Chicago, says that orders from December to April are 157 per cent above the year previous, and 100 per cent up from the comparable 1957 period. Edmund Hatch, manager of machinery and sales, Johnson Mfg. Co., Cleveland, reports orders running 100 per cent above a year ago and about on a par with the first half of 1957. With bookings double those of a year ago and inquiries way up, Mr. Hatch finds people are starting to forget about the recession."

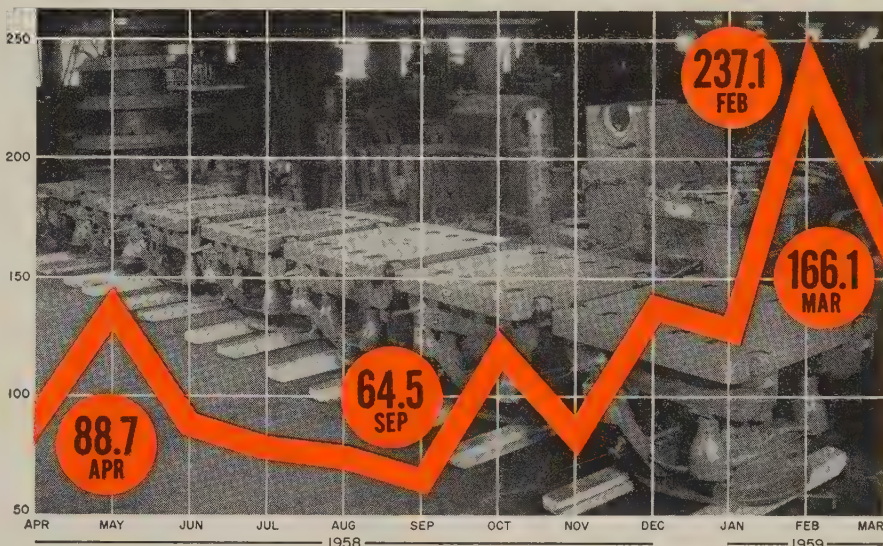
National Engineering Co., Chicago, sees business up 30 per cent from a year ago, but down 10 per cent from two years ago.

If the second quarter sees buying level off around 175 per cent of the 1947-49 average, there will be plenty of smiles among builders of blast cleaning equipment and core-making, molding, and diecasting machines.

FEMA Prexy Reports—Here's an analysis of the outlook from Gordon E. Seavoy, vice president, Whiting Corp., Harvey, Ill., and president of FEMA. "Our selling activity is as high today as in 1957, but there are fewer closings." Whiting formally closes one of every five projects it discusses with customers. Today it is being told, "we'll wait and see." Mr. Seavoy is waiting for something, perhaps a return of public confidence, to trigger more capital goods sales. "Then there will be a flood of orders," he says.

10-15% Better—How soon will

ORDERS INDEX: 1947-49 equals 100



Source: Foundry Equipment Manufacturers Association.

the flood come? There's a chance a small car from Detroit will help, but the best he expects in 1959 is a 10 to 15 per cent increase over 1958's sales. Whiting's business last year was one-third off its 1957 pace. He thinks "the rate of buying in the last quarter of 1959 will be pretty high," and hopes for a return to the 1957 rate in 1960. Supporting that view is Wheelabrator Corp., Mishawaka, Ind., whose first quarter is up 30 per cent over the like 1958 period.


• **Prices Due to Climb**—Equipment prices were cut sharply during the recession just to bring work into the shops. Producers still say they are highly competitive. Most manufacturers are marking time to see what happens in steel; they expect increases in the third quarter. Some companies lifted prices in the first quarter from 5 per cent to 7½ per cent; another will hike his rates in the next 30 days for the first time since 1956. Since orders for heavy equipment resulting from current bids won't be fabricated until the third quarter or later, the bids contain a 5 to 10 per cent anticipated price rise.

Equipment makers are also waiting for the foundry industry to pocket a significant increase in profits: "It takes money to buy

equipment," says a Commerce Department source, "and while business is better for the foundries, they aren't experiencing a profit upsurge. Price cutting during the recession kept even the foundries that were able to maintain a fair operating rate from saving money to re-equip."

• **Dollar Volume**—Preliminary figures from the Census Bureau show foundries spent \$144 million on new plant and equipment in 1957. That compares with \$136 million in 1956 and \$115 million in 1955. Roughly 80 per cent of the total goes for new machinery and equipment: \$115 million in 1957; \$105 million machines are selling the best now. In 1956; \$90 million in 1955. Spo Inc., Cleveland, reports automatic machines are selling best now.

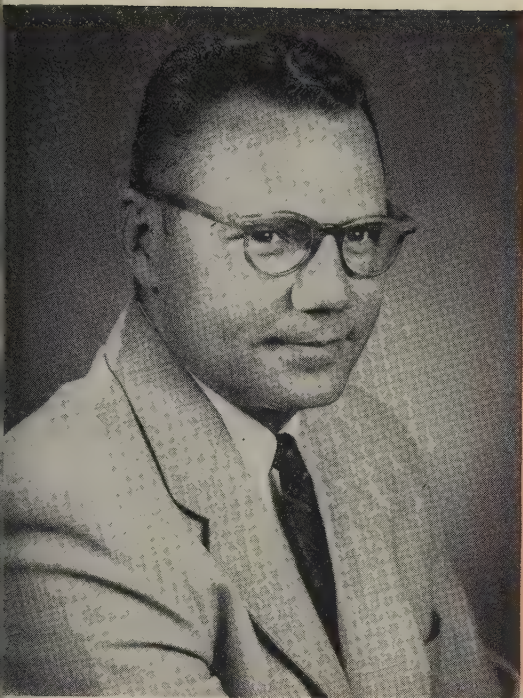
The FEMA index declined about one third from 1957 to 1958. Using the same ratio, volume of machinery sold to the foundry industry last year would run about \$75 million. For the first quarter of 1959, the FEMA index is averaging 176.9 of the 1947-49 base period. If the rate could be maintained, sales would come close to doubling this year over last. A return to 1957's rate may be the most an optimist can expect, and some of STEEL's more pessimistic sources feel that can't happen until 1960.



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million sq. ft. of completely
integrated manufacturing
facilities !***

KEY

- 1.** Machine Shop
- 2.** Erecting Floor
- 3.** Foundry
- 4.** Main Office
- 5.** Small Parts Assembly
- 6.** Main Machine Shop



Ford's Researcher Robert Eggert

How U.S. Car Market Will Grow

(Millions of units)

	Total Registrations	Projected Annual Sales
1975	82.6	10.7
1970	72.6	8.8
1965	63.1	7.6
1960	55.2	6.4

Source: Ford Div. market research staff.

Risk Reduced with Market Research

FORD MOTOR CO. spends an average of \$1 per car annually on market research. For this relatively small investment, Ford is getting information it believes will help to maintain the kind of sales it's ringing up this year. The success of 1959 Fords can be traced in part to marketing research studies.

Robert J. Eggert, Ford's marketing research manager, is reluctant to reveal all his findings. But he gives a clue to what market research can do. Referring to product designs, Mr. Eggert says: "Our studies show that people want some changes in cars, but they don't want too many."

A conservative styling philosophy has been Ford's approach for several years. This year, it seems to be paying off in market penetration. Ford Div. alone is producing 25 per cent of the industry's cars compared with 23 per cent last year. General Motors' Chevrolet Div. has slipped from 31.8 per cent of total cars pro-

duced to 27.6 per cent. Chrysler Corp.'s Plymouth, whose first quarter output was held up by glass strikes, is down from 8.2 to 6 per cent.

Whether or not this customer acceptance will change could be debatable. There's little doubt that market research studies helped Ford make a profitable decision in 1957 when the 1959 models were planned. Confirms Henry Ford II, company president: "Our consumer research has been, and continues to be exhaustive; and it weighs heavily in our product planning." How Ford's market research is set up and some of its findings should be of interest to metalworking.

- **Aims**—"Our marketing research has three broad responsibilities. It's used for market forecasting, product planning, and communications that aid in selling cars," explains Mr. Eggert.

Each division has its own research

staff which initiates studies in the three areas. Ford publishes a monthly confidential list of all projects so each division knows what the others are planning. "This allows free interchange of information and a free flow of results among the divisions," Mr. Eggert points out.

Examples of projects: Shopping studies on automobile salesmen's techniques; continuing surveys on how buyers like each year's models compared with competitive makes. From such programs, the company gets clues as to what people want now and more important, three years from now. "We first initiated a small car study back in 1954. I can't say I'm displeased with our conclusions today," comments Mr. Eggert.

Divisional report results are forwarded to Mr. Eggert's office. "Our job is to co-ordinate, summarize, and present the results to management in weekly meetings," he says. Some findings show what will affect the

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Use of Aluminum Products Per Car

(Pounds per average car)

	1959	1958	1957	1956	1955
Diecastings	21.3	19.1	18.6	15.7	12.3
Permanent Mold Castings	18.8	16.7	14.3	14.1	12.1
Sheets	9.4	8.4	5.0	2.4	1.7
Extrusions	1.4	1.5	1.6	0.2	0.3
Wire, Rods, Bars	0.4	0.5	0.4	0.2	0.1
Impact Extrusions	0.3	0.4	0.2	0.3	0.2
Others*	N/A	0.7	0.4	2.3	2.6
Totals	51.6	47.3	40.5	35.2	29.3

*Includes coatings, foil, powder, sand & plaster castings, forgings.

Source: Aluminum Co. of America. Figures do not include scrap, accessory, or replacement parts.

automotive market over the next ten or 15 years.

• **Market Forecasting**—Pointing to the figures on future car sales (Page 73), Mr. Eggert says over 70 per cent of the new cars sold each year are purchased by persons with annual incomes over \$5000. Most of these are in the \$5000 to \$8000 bracket. Family formations and population increases are fairly predictable in determining how many buyers will be in that income group. But Mr. Eggert believes real disposable income is the most important factor in forecasting markets. He cites figures showing that disposable income has been rising 2 per cent per year. Department of Commerce statistics show the number of families with incomes over \$8000 has been expanding a bit faster than other income groups, he adds.

What might keep disposable income from climbing as fast as anticipated? Mr. Eggert thinks the most important factor that affects this is scientific advances which increase productive efficiency. "Real income is a rough measure of productivity increases. Productivity can only be boosted through more efficient methods," he declares. He agrees that depreciation reforms are an important need in boosting productivity and keeping disposable income on the rise.

• **Product Planning**—In checking trends in product preference, the analyst treads on tricky ground. "We can measure what people like today, but it's tough to measure what they'll like three years from now; yet that's what counts in automotive planning," observes Mr. Eggert.

He says researchers still are trying to find out why tastes change. "We think we must find out what groups or what kinds of people are style leaders. We can't do it yet in the automobile business, but I think we're getting closer," he adds.

• **Communications**—Ford has been paying more attention to studies showing what kinds of advertising appeal most to customers and what product features should be plugged. An important factor is determining who makes the decision to buy a new car. It's believed that today's cars are styled for women. Mr. Eggert says many salesmen would be surprised to learn that men still dominate when it comes to making the final decision to buy, although the woman's voice has become more important.

Should your company get into market research? Of the \$8 billion U. S. industry spends annually on research, Mr. Eggert says only \$400 million goes into market research. Likening it to the art of weather

forecasting, he points out that it's still an inexact science. It's relatively new, but analysts are learning more about it every day.

To be effective, market research must have the wholehearted approval of top management. "The marketplace still is the ultimate test of public acceptance for any product but careful market research can reduce the risk. I believe it merits the careful consideration of any management group facing major marketing problems," he asserts.

Small Cars Called Unsafe

Small cars potentially are more dangerous than larger ones, declares Prof. John O. Moore, director of automotive crash injury research at Cornell University. He claims that preliminary studies indicate lighter cars turn over twice as often as the heavier jobs, although they do seem to have better rollover protection.

"It seems that small cars have completely different accident patterns than larger automobiles. The driver's personality or something in engineering design might be the explanations," asserts Professor Moore. He adds that many imported cars don't have enough structure ahead of the driver for protection in a crash.

U. S. Auto Output

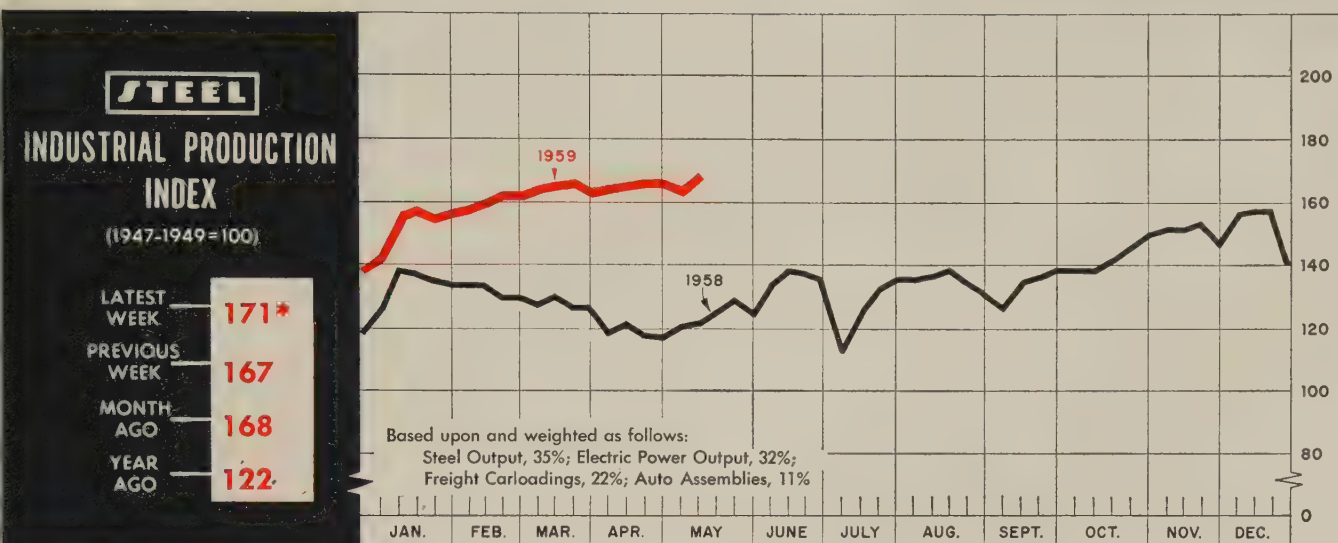
Passenger Only

	1959	1958
January	545,757	489,515
February	478,484	392,112
March	576,085	357,049
April	578,825	316,503
4 Mo. Totals	2,179,151	1,555,179
May		349,474
June		337,355
July		321,053
August		180,324
September		130,426
October		261,696
November		514,099
December		593,920
Total		4,243,526

Week Ended	1959	1958
Apr. 11	133,202	84,997
Apr. 18	135,934	73,219
Apr. 25	133,987	58,664
May 2	118,059	78,434
May 9	136,600†	78,506
May 16	135,000*	87,407

Source: Ward's Automotive Reports.

†Preliminary. *Estimated by STEEL.



*Week ended May 9.

Production Tempo in Double Time

RECORD PERFORMANCE by all four elements in STEEL's industrial production index accounted for the largest week-to-week boost of the year, pushing the trend line to a preliminary high of 171 (1947-49=100). The figure topped the previous week's final tabulation by 4 points and shaded the previous record by 2 points.

How long the record can stand is a moot question. Auto producers are having no difficulty meeting their operating schedules, and railroaders see nothing but a continuation of the sharp uptrend of the last few weeks. But steel producers have failed to come up to anticipated levels for the last three weeks. Output of electricity has been fairly steady for the last four weeks, following the seasonal pattern.

Here is the picture at press time:

• **Steel Operations** — Steelmakers have been operating at about 94 per cent of capacity for two months, and their equipment is beginning to show it. During the week ended May 10, they had hoped to turn out a record 2,668,000 net tons for ingots and castings, says the American Iron & Steel Institute. (It was this estimate which figured in STEEL's preliminary production index above.) But they failed to make it, dropping to 2,604,000 tons,

the lowest point since mid-March.

The fact that the industry is still about 6 percentage points shy of its theoretical capacity can be misleading. Those last few points represent old equipment which is costly to run and maintain. Also, some of the equipment which has made record output possible since early

March is getting old and must be shut down occasionally for repairs. The downtime prevents mills from breaking the 95 per cent barrier.

Steelmakers have the business on the books to support higher activity, and they tried again last week to set a production record. The operating rate was scheduled for

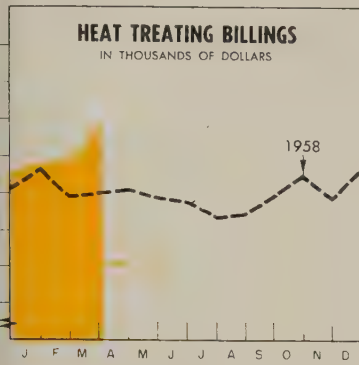
BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons) ²	2,665 ¹	2,604	1,412
Electric Power Distributed (million kw-hr)	12,600 ¹	12,546	11,315
Bituminous Coal Output (1,000 tons)	8,270 ¹	8,015	6,413
Crude Oil Production (daily avg—1,000 bbl) ...	7,130 ¹	7,113	6,220
Construction Volume (ENR—millions)	\$403.3	\$410.9	\$380.6
Auto, Truck Output, U. S., Canada (Ward's) ..	172,089 ¹	154,719	105,188
TRADE			
Freight Carloadings (1,000 Cars)	680 ¹	674	535
Business Failures (Dun & Bradstreet)	275	300	336
Currency in Circulation (millions) ³	\$31,369	\$31,244	\$30,659
Dept. Store Sales (changes from year ago) ³	+8%	+4%	-8%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions) ..	\$26,103	\$24,694	\$24,456
Federal Gross Debt (billions)	\$285.2	\$285.6	\$275.0
Bond Volume, NYSE (millions)	\$31.9	\$29.6	\$24.2
Stocks Sales, NYSE (thousands of shares)	18,994	17,776	14,104
Loans and Investments (billions) ⁴	\$94.7	\$94.9	\$92.5
U. S. Govt. Obligations Held (billions) ⁴	\$29.3	\$29.6	\$30.5
PRICES			
STEEL's Finished Steel Price Index ⁵	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index ⁶	222.1	219.2	197.1
All Commodities ⁷	119.6	119.8	119.3
Commodities Other than Farm & Foods ⁷	128.0	128.0	125.4

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-39=100. ⁶1936-39=100. ⁷Bureau of Labor Statistics Index, 1947-49=100.

ESTABLISHED 1866
**THE WHELAND
COMPANY**
CHAFFANOOGA 2, TENN.

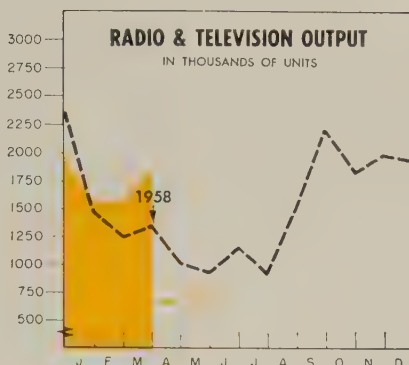
HEAT TREATING BILLINGS
IN THOUSANDS OF DOLLARS



	1959	1958	1957
Jan.	2,915.5	2,825.5	3,533.9
Feb.	2,976.0	2,466.3	3,378.9
Mar.	3,397.3	2,490.5	3,631.8
Apr.	2,542.6	3,572.4	2,542.4
May	2,421.5	3,389.6	2,374.8
June	2,374.8	2,912.1	2,139.6
July	2,139.6	2,767.5	2,213.0
Aug.	2,213.0	2,830.8	2,457.1
Sept.	2,457.1	2,765.0	2,744.9
Oct.	2,744.9	3,076.2	2,422.0
Nov.	2,422.0	2,677.2	2,799.4
Dec.	2,799.4	2,579.3	

Metal Treating Institute.

RADIO & TELEVISION OUTPUT
IN THOUSANDS OF UNITS



	Radio		Television	
	1959	1958	1959	1958
Jan. ...	1,125	1,026	437	434
Feb. ...	1,125	877	459	370
Mar. ...	1,348	931	494	417
Apr. ...	1,348	697	303	303
May ...	1,348	655	267	267
June ...	1,348	774	377	377
July ...	1,348	622	275	275
Aug. ...	1,348	1,029	507	507
Sept. ...	1,348	1,572	622	622
Oct. ...	1,348	1,322	496	496
Nov. ...	1,348	1,546	438	438
Dec. ...	1,348	1,526	415	415

Totals .. 12,577 4,921

Electronic Industries Association.

PAs Note Crescendo

The National Association of Purchasing Agents terms the business pickup as "almost dramatic" in its latest survey of its members. Fifty-six per cent of the respondents reported better business in April than in March, which is the highest "up" percentage since early 1955. And from the looks of new orders (53 per cent said they were higher in April), there will be no dropoff in the immediate future.

One indication is the bright outlook for labor among respondents. Thirty-eight per cent declared they expect to have higher payrolls in the second quarter than in the first.

Employment Score Rises

Latest report from the Labor and Commerce Departments shows that the rise in payrolls is already here. In mid-April, employment reached 65.5 million persons, the highest on record for that period. The figure compares with 63.2 million in March and is about twice the rate of rise normal for April.

The unemployment situation also improved about twice as much as it normally does between March and April. The number fell 735,-

000 to 3,627,000, the lowest total since December, 1957. Seymour Wolfbein, Labor's manpower chief, claims that if only seasonal changes take place between now and October, the jobless total will be down to 2,876,000 by then. But he expects better than seasonal improvement, which could result in the best unemployment picture since 1956.

Appliance Sales Pitch Up

Appliance sales continue to reflect the marked upturn in consumer ability and desire to buy hard goods. Norge Div. of Borg-Warner Corp. reports April factory sales of its home appliances were the best for that month in the company's 32-year history. Says Judson S. Sayre, president: "Volume was 47 per cent more than the same month in the Norge record year of 1955. No doubt about it, home appliances are getting a bigger share of the consumers' spending dollar."

The National Electrical Manufacturers Association reports that industry sales of electric refrigerators in March were 333,700 units, the highest since July, 1956. Sales of electric ranges also hit a three year high.

**Q: IN HONEYCOMB MATERIAL
WHAT'S THE
MOST CRITICAL
REQUIREMENT?**

**A: UNIFORM
THICKNESS!**

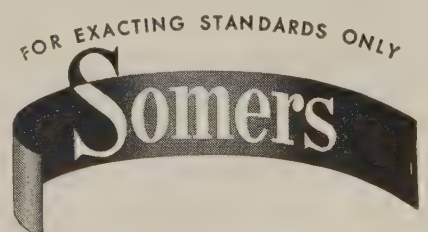
In a recent nation wide survey of honeycomb section manufacturers by an independent research organization, 75% of the responders indicated that uniform thickness of the thin metal core material was the most important factor demanded of suppliers.

With modern equipment, such as Accu-Ray gauges, Sendzimir rolling mills and unique vertical annealing furnaces, Somers combines 50 years of pioneering in the thin metal field to answer this problem with Somers ThinStrip®, produced exclusively by Somers Brass Co., Inc.

Somers also guarantees width tolerances as close as $\pm .001"$, a plus feature that assures the highest precision in honeycomb structures.

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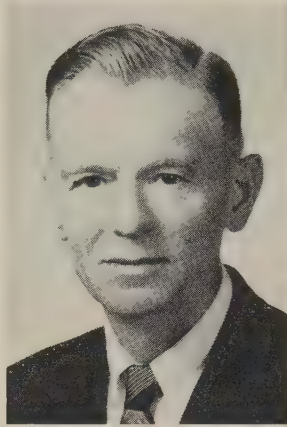
STEEL



ARTHUR E. GILMAN
Bay State Abrasives pres.



THOMAS EVANS
Crane Co. chairman



STEPHEN M. JENKS
U. S. Steel eng.-research



E. T. WALTON
Crucible dir.-metallurgy

Arthur E. Gilman was elected president of Bay State Abrasive Products Co., Westboro, Mass. He continues as treasurer.

Thomas Evans was elected chairman and chief executive officer of Crane Co., Chicago. Mr. Evans is chairman of H. K. Porter Company Inc., Pittsburgh. L. H. T. Clegg, many years president of Crane's Canadian subsidiary, had been named president of the parent company to fill the vacancy created by resignation of Neele E. Stearns. It is indicated that Mr. Clegg will serve as interim administrative officer until a permanent replacement is named.

Harvey L. Spaunburg Jr. was appointed vice president-manufacturing, Hartford Special Machinery Co., Hartford, Conn. Robert A. Bode was made vice president-sales; Francis A. Carr, factory manager. Mr. Spaunburg was manager of manufacturing for the division.

Stephen M. Jenks was appointed executive vice president-engineering and research, United States Steel Corp., Pittsburgh. He succeeds Walter F. Munford, new president and chief administrative officer of U. S. Steel. Mr. Jenks was named assistant executive vice president-operations in 1953, and became in 1958 administrative vice president-central operations (steel and coal).

Kendall C. White succeeds Emil F. Gibian as director of industrial engineering, Thompson Ramo Wooldridge Inc., Cleveland. Mr. White, now serving as manager, industrial engineering and purchasing, for the Tapco Group, assumes his new post June 1 when Mr. Gibian retires.

Louis H. Schuette was made administrative vice president for all operations of Sundstrand Corp., Rockford, Ill. A. H. Swenson was promoted from manager to vice president, Hydraulic Div. Both are newly created positions.

E. T. Walton was made director of metallurgy, Crucible Steel Co. of America, Pittsburgh. He succeeds D. I. Dilworth, resigned. Mr. Walton continues as manager-customer technical services.

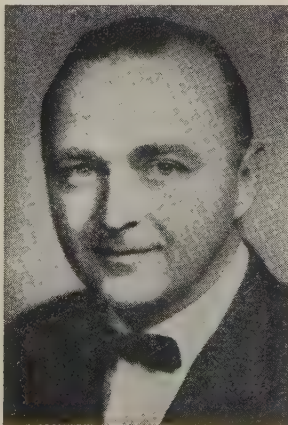
Robert H. Davies was elected president, Electric Auto-Lite Co., Toledo, Ohio. He succeeds James P. Falvey, now chairman. Mr. Davies was vice president with Clark Equipment Co. Gurdon W. Wattles, former chairman, was named chairman of the executive committee, replacing C. Russell Feldmann.

Donald T. Wynne Jr. was named division manager-plastic operations, Vlcchek Tool Co., Cleveland.

Harry H. Whittingham was appointed president and general manager, Long Mfg. Div., Detroit, Borg-Warner Corp. He was executive vice president and assistant general manager, a position he assumed in 1957 when Detroit Gear Div. was consolidated with Long Mfg. He



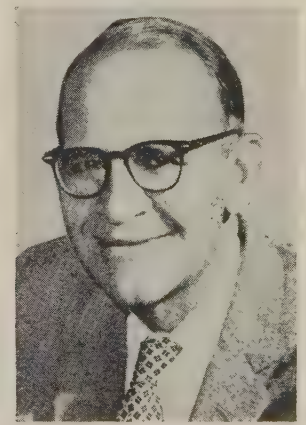
HARVEY L. SPAUNBURG JR.
Hartford Special Machinery vice presidents



ROBERT A. BODE



LOUIS H. SCHUETTE

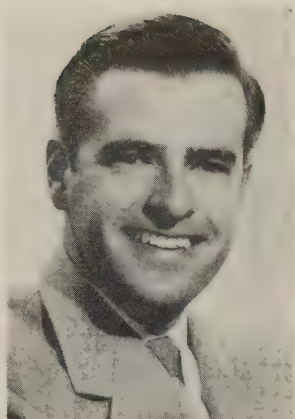


A. H. SWENSON

Sundstrand executive positions



RICHARD M. FURLAUD
Olin Mathieson v. p.



ROBERT E. ROOT
Rheem division manager



AL THURMAN
heads Lombard operations



JOSEPH J. ROSECKY
Clark Bros. exec. v. p.

is also chairman of Long's two Canadian subsidiaries.

Richard M. Furlaud, general counsel of **Olin Mathieson Chemical Corp.**, New York, was appointed a corporate vice president. **Richard Bryce** was named treasurer to succeed **Earl R. Van Vliet**, retired.

Robert E. Root was appointed manager, Electro-Mechanical Div., Los Angeles, **American Electronics Inc.** He is responsible for the division's manufacturing facilities in East Los Angeles, as well as those under construction in Fullerton, Calif.

Charles S. Shepherd was appointed director of purchases, **American Bridge Div.**, Ambridge, Pa., U. S. Steel Corp. He succeeds **William H. Walter**, retired. Mr. Shepherd was assistant purchasing director.

William K. Meyers, executive vice president, was elected president of **Bassick Co.**, Bridgeport, Conn., subsidiary of **Stewart-Warner Corp.**

Al Thurman was named president of **Lombard Mfg. Co.**, and vice president of **Lombard Corp.** His headquarters are in Youngstown. Prior to joining Lombard, he served as a management consultant and consulting engineer to heavy industry from his office in Huntington, W. Va., which he will maintain.

Edward W. Lothman was elected senior vice president; **Richard W. Nuffort**, vice president and treasurer of **Whitehead Metals Inc.**, New York, an affiliate of **International Nickel Co. Inc.** **Casimir J. Bianowicz** was made general sales manager for all products of Inco's Huntington Alloy Products Div., and was elected assistant vice president of **Whitehead**.

John C. Redmond, former vice president-metallurgical research and development for **Kennametal Inc.**, joins **Firth-Sterling Inc.**, Pittsburgh, on June 1 as director of research. He will succeed **David F. Dickey**, who is resigning as of that date.

Joseph J. Rosecky was appointed executive vice president, **Clark Bros. Co.**, Olean, N. Y., **Dresser Industries**. He joined Clark in 1957 as vice president-operations. He succeeds **F. W. Laverty**, recently named president.

Robert L. Reese was promoted manager, product development, **Hubbard & Co.**, Chicago. He succeeded by **Andrew C. Verock**, chief engineer, pole line hardware, operating out of the new Hubbard research laboratory in McCook, Ill. Mr. Verock was with **Commonwealth Associates Inc.**

Joseph L. Mullin retired as executive vice president, **American Manganese Steel Div.**, **American Brake Shoe Co.**, New York.

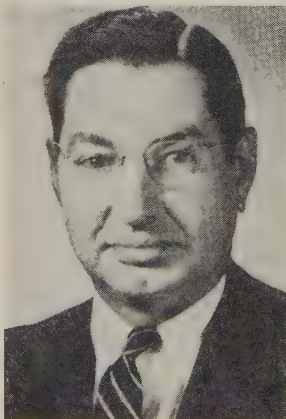
Frank Randall was elected vice president, **North American Philips Co. Inc.**, New York. He continues as president of **Amperex Electronics Corp.**, New York, and as vice president of **Ferroxcube Corp.** of America.



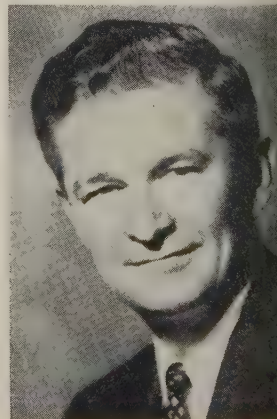
CHARLES S. SHEPHERD
American Bridge dir.-purchases



WILLIAM K. MEYERS
Bassick president



JOHN C. REDMOND
joins Firth-Sterling



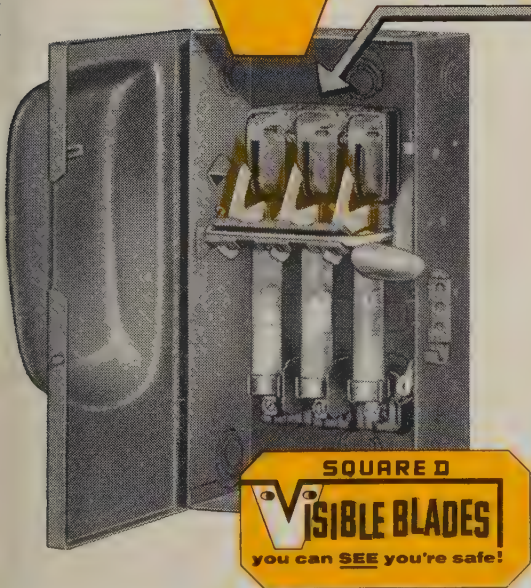
FRANK RANDALL
North American Philips v.p.

ASK THE MEN IN THE PLANT!

*They'll Tell You the
Thing They Want Most
in a Safety Switch
is **SAFETY THEY CAN SEE**
—and that means*



VISIBLE BLADES



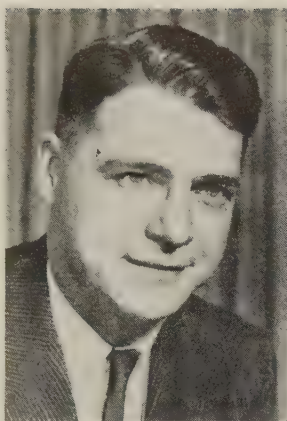
The men who pull the switches will tell you what can happen when a switch, *believed* to be open—*isn't*. A lot of things can happen—and every one of them is bad. Personnel is in danger. Motors can single-phase. Machinery and work can be damaged. Down-time can skyrocket.

Doesn't it make sense to insist on **Visible Blade** construction which gives you a road block against any of those possibilities? Doesn't it make equally good sense to insist on the safety switch which gives you that construction—plus a lot of other performance advantages?

EC&M HEAVY INDUSTRY ELECTRICAL EQUIPMENT...NOW A PART OF THE SQUARE D LINE



SQUARE D COMPANY



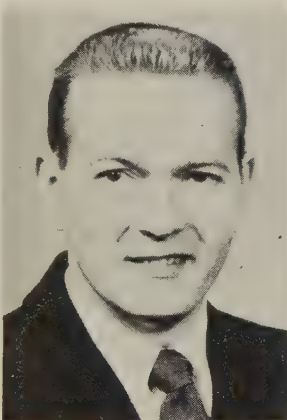
DR. DILLON EVERS
heads Mallory-Sharon group



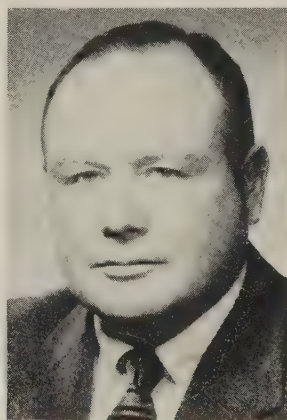
CHARLES E. PATTERSON JR.
heads Chambers subsidiary



JOHN C. TOOKER
White Motor-Reo post



STANLEY L. ALBRIGHT
Hunter Spring plant mgr.



L. C. LADERER
Wells Aluminum exec. v.p.



ROBERT H. HOAGLAND
Claud S. Gordon v. p.

ica, Saugerties, N. Y., affiliate companies.

Stanley L. Albright was made manager, Plant No. 2, **Hunter Spring Co.**, Lansdale, Pa., division of **American Machine & Metals Inc.** He is in charge of manufacturing. He previously represented Hunter as a sales engineer in the New York area.

L. C. Laderer was appointed executive vice president, **Wells Aluminum Corp.**, North Liberty, Ind. He was vice president and director of sales.

William Zatezalo was made open hearth superintendent, **Weirton Steel Co.**, Weirton, W. Va., division of **National Steel Corp.** He succeeds **J. R. Rath**, retired.

Walter G. Mitchell was elected executive vice president of the newly formed **Western Div.**, Torrance, Calif., of **R. C. Mahon Co.** **D. L. Buttrey** was elected vice president-manufacturing; **Walter E. Willard**, vice president-Structural Steel Div.

Robert H. Hoagland was elected vice president and general manager, **Claud S. Gordon Co.**, Chicago, subsidiary of **Cleveland Pneumatic Industries Inc.** For the last five years, Mr. Hoagland served as vice president of **Aerovox Corp.**, New Bedford, Mass.

Kenneth F. Echard was made sales manager; **Roman F. Beck**, blast furnace superintendent, **Tonawanda Iron Div.**, Tonawanda, N. Y., **American Radiator & Standard Sanitary Corp.** Mr. Echard succeeds **Frank P. Breier**, retired for reasons of health. Mr. Beck succeeds **Albert D. Bright**, recently made division manager of operations.

William E. McQuillen was named manager of market research, **Exide Industrial Div.**, Electric Storage Battery Co., Philadelphia. Former process engineering supervisor at the **Stokes Molded Products Div.**, Trenton, N. J., he succeeds **Thomas Peacock**, recently named Exide's marketing manager. **O. L. Robertson** was named Exide's motive power market manager.

Mallory-Sharon Metals Corp., Niles, Ohio, formed a **Sponsored Research Group**, and named **Dr. Dillon Evers** manager of the new department. It will carry out research and development projects on special metals for the government. The group will be a part of **Mallory-Sharon Metals' R&D group**. **L. G. McCoy** is staff administrator. Dr. Evers joined **Mallory-Sharon** in 1956, and has been staff technical advisor to the company's research and development department.

Charles E. Patterson Jr. was elected president, **Chambers Porcelain Buildings Inc.**, Chicago, subsidiary of **Chambers Mfg. Corp.** He was with **Vitreous Corp.** as manager of engineering and construction.

John C. Tooker, former general manager of **White Motor Co.'s Reo Div.**, Lansing, Mich., was named a vice president of **White Motor**, and general manager of the **Reo Div.** **Noah O. Gresham**, director-wholesale operations at **White**, was appointed vice president-wholesale operations, **White Truck Div.**, Cleveland.

John G. Martin was named domestic sales manager, **Boiler Div.**, **Barberton, Ohio, Babcock & Wilcox Co.** He is succeeded by **William E. Butler** as manager of the Cincinnati district sales office.

Edwin J. DuBane was made sales manager, **Borroughs Mfg. Co.**, Kalamazoo, Mich., subsidiary of **American Metal Products Co.**

Herbert S. Lindahl was promoted to chief product engineer-refrigeration, **Betz Div.**, Danville, Ill., **Bohn Aluminum & Brass Corp.** **Gordon Kayser** was promoted to chief product engineer-heating and air conditioning.

OBITUARIES...

J. Lewis Small, 85, founder and president, **J. Lewis Small Co. Inc.**, Elwood, Ind., died May 4.

Myron C. Taylor, 85, former chairman, **U. S. Steel Corp.**, died May 6 in New York.

Byron F. Bower, 63, founder of **Pines Engineering Co. Inc.**, Aurora, Ill., died May 5. He served as president.

Canada Gets Big Pipe Mill

Page-Hersey Tubes and Steel Co. of Canada will produce steel pipe up to 42 in. OD in \$10 million facility to be built in Edmonton, Alta. Could operate in six months

A PIPE MILL with an annual capacity of about 325,000 tons will be built at Edmonton, Alta. It is a joint venture of Page-Hersey Tubes Ltd., Toronto, Ont., and Steel Co. of Canada Ltd., Hamilton, Ont. The mill (estimated cost: \$10 million) will be operated by a separate company incorporated under Alberta laws.

It will produce steel pipe from 6 in. to 42 in. OD. It will be the first mill in Canada and the second in the world to make steel pipe larger than 36 in. in diameter in continuous welded 40-ft lengths, company officials of the companies.

Fast Construction—W. E. Bannerman, president of Page-Hersey, says that "if required, the new plant can be in partial production in six months, and in any event will be in full production in 12 months." He added that the decision to locate in Edmonton was the result of discussions with members of the oil and gas industries having regard to future pipe-laying areas.

"The decision was also influenced by discussions with the railways, with respect to freight haulage and freight rates, both important factors in a heavy industry such as this," he says.

Cold-Expanding Process—Page-Hersey and Stelco have been making steel pipe from 20 in. to 36 in. OD for the last two years at the jointly owned Welland Tubes Ltd., Welland, Ont. A specialized, cold expanding process is used.

"The cold expansion at our Edmonton plant," Mr. Bannerman says, "will be carried out on a \$1 million machine." Page-Hersey was the first company to use the process in the production of roll-formed pipe, and to date remains the only firm in Canada equipped to use it, although it has been adopted by almost every other main pipe producer throughout the world, he states.

The 325,000 ton pipe production capacity of the Edmonton mill and the 300,000 ton capacity of the Welland "Big-Inch" mill will ensure that the large diameter pipe needs of Canada are fully met, he said.

Firms Change Names

Phoenix Steel Corp. is the new name of Barium Steel Corp., New York. Negotiations for construction of an oxygen steelmaking plant at Burlington, N. J., have narrowed down to three groups of American, British, and German suppliers, says J. A. Sisto, chairman. A turn-key contract for construction of the plant will likely be signed within 90 days.

Sundstrand Machine Tool Co. changed its name to Sundstrand Corp. The company is building an addition to its Belvidere, Ill., machine tool manufacturing plant.

Crucible to Build Mill

Crucible Steel Co. of America, Pittsburgh, is negotiating new financing which will provide funds for the purchase and installation of a multiple stand, continuous, hot strip mill at its Midland (Pa.) Works. Estimated cost: \$23 million.

"The purpose of the program," says Joel Hunter, president, "is to effect substantial economies in the production of flat rolled products, especially stainless steels, to improve quality, and to provide capacity needed for further expansion of the company's flat rolled products."

Universal-Cyclops Expands

Universal-Cyclops Steel Corp., Bridgeville, Pa., has purchased the land and buildings of Flannery Mfg. Co., that city. The sale involves none of the manufacturing facilities or equipment. Universal-Cyclops will use the property for

the warehousing of finished steel and the consolidation of its Bridgeville plant offices.

Forms Smith-Erie Div.

A. O. Smith Corp., Milwaukee, has formed the Smith-Erie Div. through consolidation of Erie Meter Systems Inc., Meter Div., and Service Station Pump Div. H. D. Leisenring is general manager of the consolidated division; J. S. Thompson, assistant sales manager; J. W. Harris, sales manager, engineered products; C. P. Hammill, sales promotion manager; L. G. Blumenberg, service manager; and R. L. Dull, assistant service manager.

Kaiser Gets Mill Contract

Kaiser Steel Corp.'s Fabricating Div. will manufacture at its Napa, Calif., plant the major equipment for Japan Steel & Tubes Co.'s large diameter pipe mill. The mill will be built near Tokyo to turn out pipe from 18 in. through 40 in. in diameter. The \$2.5 million Kaiser contract covers a pipe forming line, welding equipment, a hydraulic expander, and related finishing equipment.

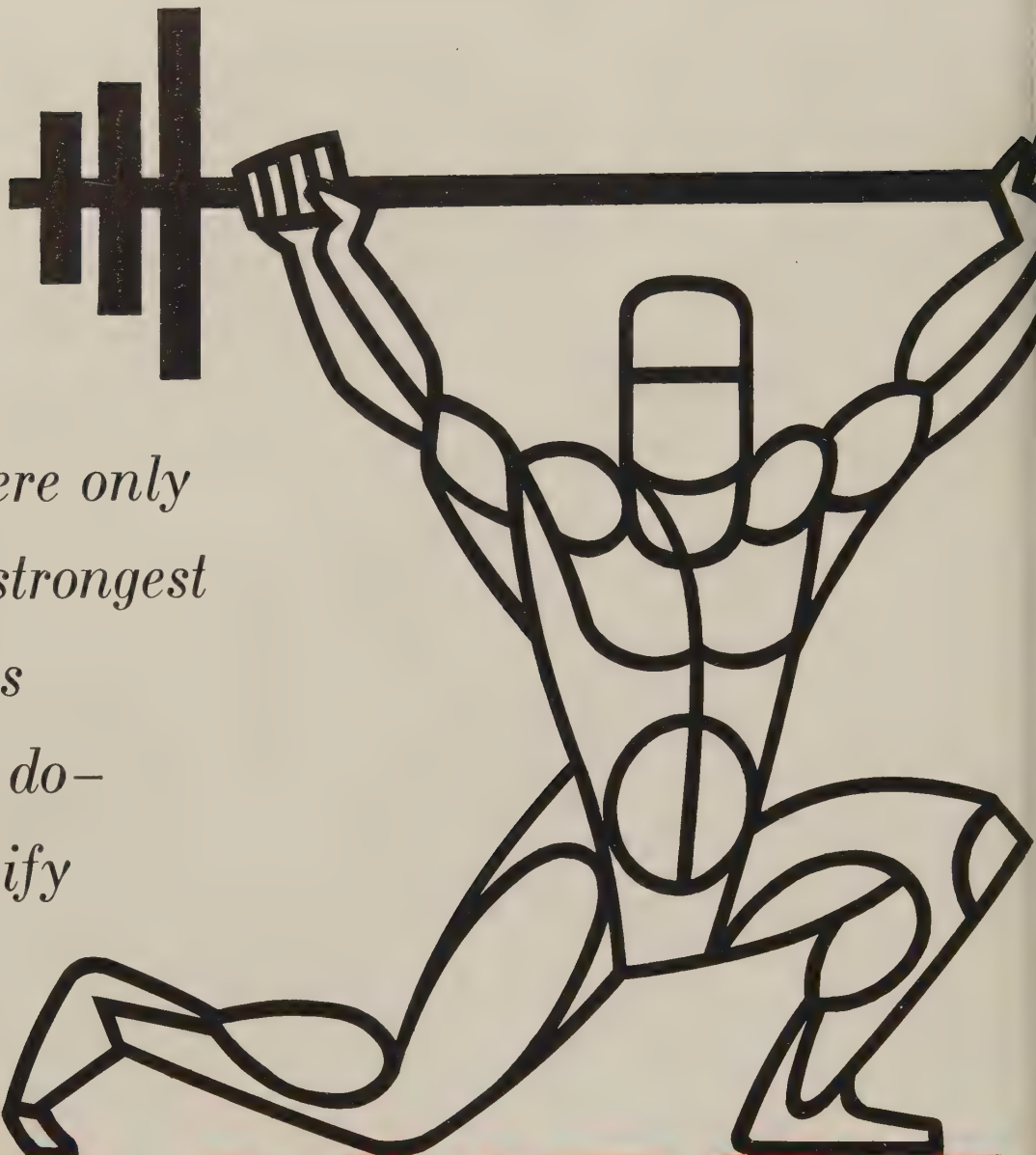
Porter Builds in Virginia

H. K. Porter Company Inc., Pittsburgh, will lease a \$1.2 million plant to be built at Danville, Va., for its Disston Div., Philadelphia. Construction is expected to be completed early in September. Output of the 155,000 sq ft structure will include industrial saws, power and garden tools, and other hardware items.

Eaton Heads New Unit

Hamilton Standard, a division of United Aircraft Corp., Windsor Locks, Conn., created a new department for the design, development, and manufacture of specialized ground support equipment for missiles and aircraft. The department is headed by Edwin D. Eaton. He will be assisted by R. P. Lambeck, chief of preliminary design and sales; W. M. Alford, development engineer; Harold Rourke, chief of ground support equipment

(Please turn to Page 90)



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the strongest
steels
will do—
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N-A-XTRA

BEST LOW-ALLOY EXTRA-STRENGTH STEEL YOU CAN BUY



Now available, N-A-XTRA HIGH-STRENGTH is a low-alloy heat-treated steel, fully quenched and tempered. The minimum yield strength range of N-A-XTRA steel is from 80,000 to 110,000 psi.

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Write today for your copy of new illustrated technical brochure. Address Great Lakes Steel Corporation, Detroit 29, Michigan, Dept. B-6.

GREAT LAKES STEEL

A DIVISION OF NATIONAL STEEL CORPORATION



(Concluded from Page 87)

production; and S. V. Martin, administrative assistant. Vernon E. Hupp is chief of experimental operations; J. W. Meier, head of hydraulic pump development work.

GM Merges Two Divisions

General Motors Corp., Detroit, consolidated its Central Foundry and Fabricast divisions. Fabricast is part of Central Foundry Div. and its plants in Bedford, Ind., and Jones Mills, Ark., are designated as the Fabricast plants of Central Foundry Div. James H. Smith is general manager of Central Foundry; G. A. Zink, manager of the Fabricast plants.

Leece-Neville Diversifies

Leece-Neville Co., Cleveland, has diversified its product line through acquisition of A. C. Motor Div. of O. A. Sutton Co., Wichita, Kans. It marks the company's first move into the alternating current motor field. Range of the new motors is 1/150 to 1/4 horsepower.

Ohio Ferro-Alloys Expands

The last of three large electric furnaces has been turned on at Ohio Ferro-Alloys Corp.'s plant at Powhatan Point, Ohio. Major products of the plant are silicon metal and silicon alloys.

Robertshaw-Fulton Builds

Robertshaw-Fulton Controls Co., Richmond, Va., is building a \$4 million plant at New Stanton, Pa., which will increase production capacity of its Robertshaw Thermostat Div. by 50 per cent. It will consist of two manufacturing buildings with 265,000 sq ft of floor space and an office building with 62,000 sq ft. When completed in mid-1960, it will replace plants at Youngwood and Scottdale, Pa.

Ferroalloy Plant Enlarged

Pittsburgh Metallurgical Co. Inc., Niagara Falls, N. Y., is installing another furnace at its Calvert City, Ky., plant. The company produces ferroalloys and expects to start operation of the new facility in the last quarter of this year.

To Build Oxygen Plant

Air Products Inc., Allentown, Pa., will build a \$6 million plant at Glassmere, Pa., to produce liquid oxygen, nitrogen, and argon. Initial operation is scheduled for this fall.



CONSOLIDATIONS

Koppers Co. Inc., Pittsburgh, purchased George W. Swift Jr. Inc., Bordentown, N. J., maker of special machinery for the paper-box industry. The Bordentown plant is assigned to Koppers' Metal Products Div., Baltimore.

Magnethermic Corp., Youngstown, has taken over ownership and operation of Ajax Engineering Corp. and Ajax Electrothermic Corp., Trenton, N. J. The organization has been renamed Ajax Magnethermic Corp. Ajax Engineering makes low frequency induction melting equipment; Ajax Electrothermic, high frequency induction melting equipment.

Ducommun Metals & Supply Co., Los Angeles, acquired Barde Steel Co., Seattle, a service center for hot rolled carbon steel, cold finished bars, cold rolled and galvanized sheets.

H. D. Conkey & Co., Mendota, Ill., purchased Spartan Tool Co., Chicago, manufacturer of power driven drain and sewer line cleaning machines, sewer cable, and cutting tools.

Baird-Atomic Inc., Cambridge, Mass., purchased four companies: Atomic Associates Inc. of New York, Atomic Associates Inc. of California, Atomic Accessories Inc., and Atomic Development & Machine Corp. Baird-Atomic makes electronic and atomic instrumentation, spectrographic equipment, and military infrared systems.

Artloom Industries Inc., New York, acquired City Iron Works Inc. and its subsidiaries, City Iron Works Erection Co. and City Bridge & Steel Works Inc., all of Hartford, Conn. City Iron and its

affiliates are fabricators and erectors of structural steel for bridges and buildings.

Alliance Ware Inc., Alliance, Ohio, purchased Crown Sanitary Pottery Inc., Evansville, Ind. Alliance Ware, a subsidiary of American Metal Products Co., Detroit, produces porcelain-on-steel plumbing ware, while Crown Sanitary produces companion products.

Airtek Dynamics Inc., Los Angeles, acquired Research Welding & Engineering Co. Inc., Compton, Calif. John A. Toland, founder of RW&E, becomes vice president of both firms.

Riverside Plastics Corp., Hicksville, N. Y. purchased Bischoff Chemical Corp., Ivoryton, Conn., maker of stripable plastic coatings used for protecting metal cutting tools and metal parts during shipment and storage and as a stop-off in plating.

Fuller Co., Catasauqua, Pa., purchased Traylor Engineering & Mfg. Co., Allentown, Pa., a subsidiary of General American Transportation Corp., Chicago. Traylor designs and makes mining, smelting, cement and other rock products processing machinery.

Northrop Corp., Beverly Hills, Calif., acquired Page Communications Engineers Inc., Washington.



Youngstown Steel Products Co. (representing Youngstown Sheet & Tube Co., Youngstown) moved its district sales office to 706 Second Ave. S., Minneapolis 2, Minn.

Hubbard & Co., Chicago, moved its New York sales office to 790 Broad St., Newark 2, N. J. The Unit Rail Anchor Div. and Tool Div. are also involved in the move.

Benjamin Metals Co. will move its Los Angeles warehouse and general office to 1829 W. El Segundo Blvd., Compton, Calif. The firm stocks steel, aluminum, brass, and copper products.

National Cylinder Gas Div.

5 — 6 — 7 — 8 — 9 — 10 —
4 — 3 — 2 — 1 —
POWER OFF

DELAY

10 — 9 — 8 — 7 — 6 — 5 — 4 — 3 — 2 — 1 — 0 —
FINE GAIN

5 — 6 — 7 — 8 — 9 — 10 —
4 — 3 — 2 — 1 —

RANGE

BRANSON INSTRUMENTS, INC.
BROWN HOUSE ROAD • STAMFORD • CONNECTICUT

this photograph is slightly enlarged

- sensitivity** ● full-scale deflection for #1 Alcoa Test Block (1/64" flat-bottom hole) at 2.25 and 5.0 mc.
- resolution** ● in contact testing, 3/64" flat-bottom hole 1/8" below the surface at 2.25 mc.
- markers** ● pyramid type, adjustable for length and delay.
- frequency** ● infinite choice, as determined by transducer, between 0.4 mc and 10.0 mc.
- flaw alarm** ● optional plug-in.
- dimensions** ● 7½" x 11" x 20¼" deep • price \$2750

SONORAY
FLAW DETECTOR

DAMPING

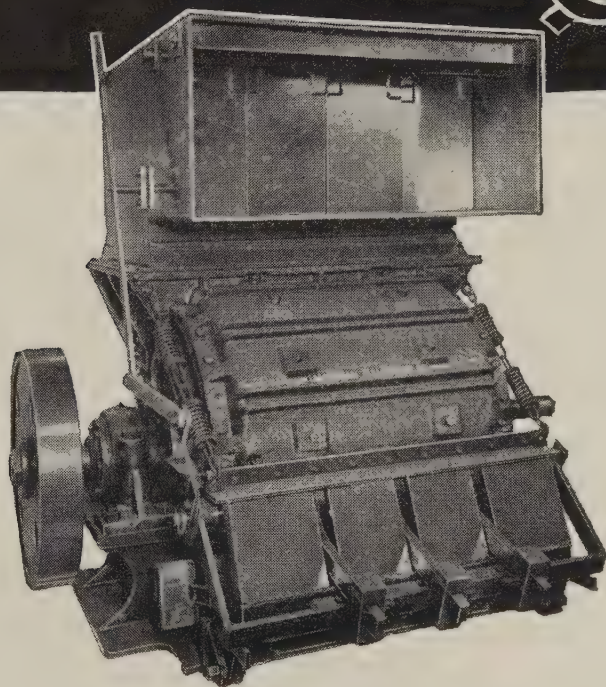
COARSE GAIN

6 — 5 — 4 — 3 — 2 — 1 —
7 — 8 — 9 — 10 —

A — B — C — D — E



Here's A Curly Cue To New Market Value For Your Machine Turnings



American METAL TURNINGS Crusher

That single machine turning of curled-up steel shown above can be mighty troublesome and costly to your operations.

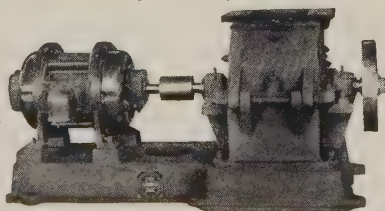
Gnarled up with thousands of others like itself, it becomes a problem in space . . . gallons of re-usable cutting oil are trapped in the folds . . . and the scrap value is greatly minimized.

Answer? Run this tangled waste through an efficient, AMERICAN METAL TURNINGS CRUSHER. Out come sized ships that are easy to handle for shoveling or pneumatic handling . . . easy to store (savings in space up to 75%) . . . easy to spin for oil recovery . . . and crushed turnings command a higher price.

The cost is easy, too, on your scrap recovery program. Pays for itself.

RECLAIM FUSED WELDING FLUX

American Hammermill reduces fused flux to fine regranulation for perfect re-use. Why throw away profits! Details on request.



"Write for Metal Turnings Bulletin"

Originators and Manufacturers of Ring Crushers and Pulverizers

1539 MACKLIND AVE. • ST. LOUIS 10, MO.

Chemetron Corp., Chicago, moved its southwestern regional headquarters to 519 Braniff Airways Bldg., Dallas, Tex.

United Shoe Machinery Corp. moved its Pop Rivet Div. to a larger plant at Shelton, Conn.

United Steel Supply Corp. and its United Alloy Steel Div. moved to their new offices and warehouse at 20495 Woodingham, Detroit 21, Mich.



ASSOCIATIONS

J. K. McEvoy, formerly sales manager with Unit Steel Co., has been appointed executive secretary of the Great Lakes Fabricators Association, Detroit.

Automatic Welding Machinery Association has been organized with headquarters at 1010 Euclid Ave., Cleveland 15, Ohio. E. W. Hollis, Lewis Welding & Engineering Corp., Bedford, Ohio, is president; Willard Gunzelman, World Electric Co., Cleveland, vice president.

John D. Bradley, Bunker Hill Co., San Francisco, has been re-elected president of the Lead Industries Association, New York.

Industrial Research Institute Inc., New York, named Dr. R. W. Cairns president and R. G. Chollar vice president and president-elect. Dr. Cairns is director of research, Hercules Powder Co. Inc., Wilmington, Del. Mr. Chollar is vice president, research & development, National Cash Register Co., Dayton, Ohio.

Arnold Arch has been named executive secretary of the Air Pollution Control Association, 4400 Fifth Ave., Pittsburgh 13, Pa.

National Association of Architectural Metal Manufacturers, Chicago, announced election of presidents of its divisions: E. P. Benson, A. J. Bayer Co., Los Angeles, Tablet & Letter Div.; D. D. Williams, Brasco Mfg. Co., Harvey, Ill., Store Front & Entrance Div.; J. T. Edwards Jr., J. T. Edwards Co., Columbus, Ohio, Iron & Steel

BARIUM

STEEL CORPORATION

has changed its name to

PHOENIX

STEEL CORPORATION

PHOENIXVILLE, PA., May 1—The stockholders of the Corporation in their annual meeting have just overwhelmingly approved the change in name from “Barium” to Phoenix Steel Corporation.

The management of the Corporation believes that the effectiveness of its manufacturing, purchasing, sales, financial and other efforts will be substantially enhanced by the identification of all its operations with the “Phoenix” name under which its products are sold.

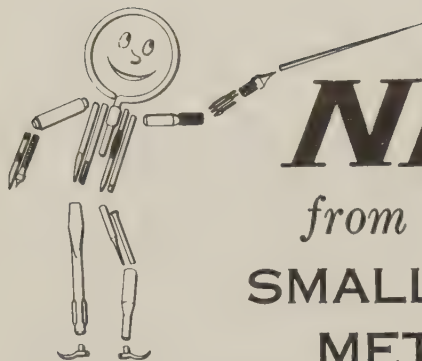
The name Phoenix has long been used by both major subsidiaries of the Corporation: Phoenix Steel Corporation and Phoenix Bridge Company. Since 1783 when the first iron was rolled at Phoenixville, nails, iron, cannon, railroad rails, steel plate, structural steel and, most recently, seamless pipe and tubing from the Phoenix facilities have played an important part in the nation's growth.

The Phoenix Bridge Company, founded in 1864, and the oldest in the country has also played a prominent part in the development of this country's unparalleled highway and railroad systems.

With another period of growth in prospect for this long-lived company, it is both fitting and efficient to identify all the Corporation's activities under its historic name: PHOENIX.*

PHOENIX STEEL CORPORATION

** At the annual meeting, the stockholders were told that, “a turn-key contract for the construction of the company's proposed oxygen steel-making plant at Burlington, New Jersey, will likely be signed in 60-90 days.”*

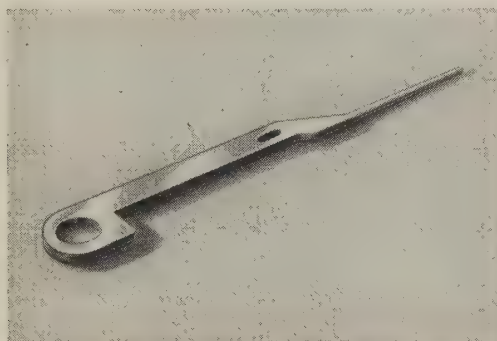


NEWS

from Torrington on

SMALL PRECISION METAL PARTS

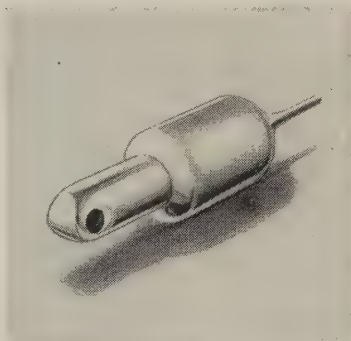
"Custom manufacture" need not be costly—at least, as practiced at Torrington's Specialties Division. Our engineers, experienced in a multitude of methods and operations, have a knack for fitting the most efficient techniques to any small metal part in question. And these methods are not necessarily the most obvious. The motto might well be, "Precision at any cost—so long as it's the *lowest* cost possible!"



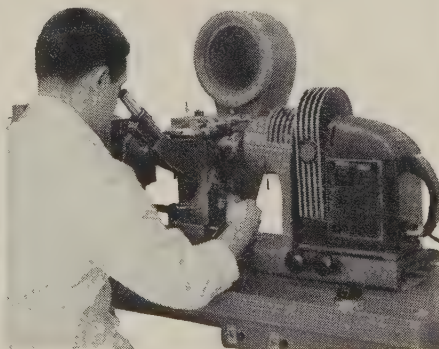
Take the control pin and sensing pin we make for a leading business machine manufacturer. Diameter of the circular section must be held to .001". Other critical dimensions require as stringent tolerances. Torrington selected a combination of stamping and swaging operations as most economical and efficient. High accuracy is achieved without tool marks or stress concentration points. Parts are tempered to RC 52-54, and are accurate to required tolerance *without grinding* and have a better finish than grinding would produce!

Then there's the pin we make for an aircraft application. Made of 440C stainless—a difficult material to work—it is finished to 8 micro-inches, again without grinding. The three radii are held concentric to .006". After tempering to RC 52-60, the part is given a .0002 to .0004" hard chrome plate.

Part of the perfection of the finished unit is the quality of material used. Skilled metallurgists have access to the



most modern laboratory equipment to make sure materials meet your drawing specifications. We maintain three separate heat-treating departments, each with equipment selected for specific types of parts or materials involved. Statistical quality control methods insure the quality of product you specify. For help with



your large quantity requirements of small precision metal parts, just circle our number on the reply card, call our area salesman, or write direct to:

The Torrington Company, Specialties Division, 900 Field Street, Torrington, Conn.

TORRINGTON SPECIAL METAL PARTS

Makers of Torrington Needle Bearings

Div.; S. M. Olson, C. W. Olson Mfg. Co., Minneapolis, Non-Ferrous Div.; and R. L. McKenzie Flour City Ornamental Iron Co., Minneapolis, Metal Curtain Wall Div.

Dr. G. A. Downs brough was elected president of the Scientific Apparatus Makers Association, Chicago. He is president and treasurer of Boonton Radio Corp., Boonton, N. J.



NEW OFFICES

A. M. Byers Co., Pittsburgh, opened a sales office at 1-D E. Grace St., Richmond, Va., in charge of D. F. Williams.

Bailey Meter Co., Cleveland, opened a sales office at 110 Halsted St., East Orange, N. J., under the management of H. C. Wheaton who also manages the company's New York district office. Bailey Meter makes industrial instruments and automatic controls for the power and process industries.

R. D. Werner Co. Inc., New York, transferred its New York sales and advertising offices and the Aluminum Safety Products Div. to its plant at Greenville, Pa. The firm's principal products are aluminum ladders, stages, scaffolding, sink frames, and metal molding.

NRC Equipment Corp., a subsidiary of National Research Corp., Newton, Mass., established an engineering office at 499 Hamilton St., Palo Alto, Calif. Edward G. Ferrari is manager of the engineering office. The firm makes high vacuum equipment.

Eimco Corp., Salt Lake City, Utah, is building a branch office and parts depot on Penn Lincoln Parkway West, Pittsburgh. The firm's products include tractors, loaders, mining machinery, and process and filter equipment.

Electronic Engineering Co. of California, Santa Ana, Calif., opened a branch office at 1101 Vermont Ave. N.W., Washington 5, D. C. L. M. Baxter is the Washington district manager.



Giving More Public Service

GOOD BUSINESS CLIMATE—you can't cuss your way into it. You can't buy it. You can't wish it into being.

Unfortunately, management and managers have tried all three. And the typical manager still complains: Depreciation laws are outmoded. Corporate taxes are too high. Zoning laws in many areas discourage and prevent expansion. . . . Labor power and influence of labor unions on our government and economy are way out of proportion. . . . We give the maximum to our community—and get the minimum return."

Like anything else, you have to work at it to create and maintain good business climate. The emphasis is intended for you, the individual, because good business climate is becoming an increasingly important facet in the changing role of the metalworking manager.

Practicing good community relations and the development of good business climate have been almost synonymous in the postwar period. In the "be a good neighbor" concept which top management has embraced, managers have been doing an excellent job. They've led fund raising campaigns for Com-

munity Chest and Red Cross. They've organized Junior Achievement, supported the Boy Scouts, participated in the Parent-Teachers Association, coached Little League baseball, and joined service organizations like Rotary and Kiwanis.

But one shortcoming stands out: An indifference toward politics and government.

Reflect for a moment on the basic elements of good business climate—those which enable a company to prosper and grow and contribute to a community's higher standard of living. Politics and the government it creates really determine the

type of business climate in which we operate.

The blame for the blank spot is ours. As companies, we have formally (via written policies) or informally discouraged our managers from "playing politics." As individuals, we've been devoted to our functions in administration, manufacturing, engineering, purchasing, and marketing and by default have left "politics to the politicians."

But last fall's elections triggered a new concern for politics and the trend of our nation's business climate. Executives from some of our leading corporations began to inject a new note of urgency into speeches warning of America's drift

toward socialism. Thomas R. Reid, director of civic affairs, Ford Motor Co., expressed it this way at an American Management Association meeting in Los Angeles:

"... unless we make politics an essential part of our business, we are going to find it increasingly difficult to do business at all."

The problems of business climate, explains Robert Paxton, president of General Electric Co., are no more mysterious or complex than other problems you face daily. State and national government representatives are almost all accountable to some local constituency, and so they are responsive to local action and opinion. The solution to business climate problems, he emphasizes, lies

in individual, grass roots study and action.

The New Dimension

This, then, adds an important new dimension—practical politics—to the role of the metalworking manager. The time to embrace it is now, while the movement is gathering momentum—the impact will be greater.

What's involved? The obvious first step belongs to top management. It must give its full endorsement and encouragement to the participation of its managers in practical politics.

Step two is like tackling any problem—you must have an organization

Rockford Managers Cite Need for Political Action

Industrial executives in Rockford, Ill., decided early this spring to initiate a practical course in politics for its managers. Reason: They believe it's one way to maintain and improve the area's business climate.

The Chamber of Commerce is program co-ordinator. A committee, headed by Clayton Gaylord, president of Ingersoll Milling Machine Co., developed an 11-session course, tailored to the Rockford area's requirements.

Result: About 350 individuals—most of them metalworking managers—are taking the course in their own companies. Here's what four of them think of it.



Awareness of Problem Must Be Developed

"At Ingersoll Milling Machine Co. we have 35 taking the course," says Clayton Gaylord, president. "One of its most important functions is to create an awareness on the part of the individual of the need for his greater interest and participation in political activity."

"The kind of government we have—local, state, and federal—determines the kind of business climate we operate in. To maintain and improve this climate requires the personal efforts of every manager."

n—within your company and
ong the firms in your area—to
vide leadership and co-ordinate
e program.

You can't fly a plane without in-
uction—the art of practical pol-
s must be learned, too. Experi-
ce by the leaders shows that in-
nt training plays a key role.

The final step is action. The
ting of goals can be aided
ough formal appraisal of the
al business climate, but nothing
done unless you, the managers,
out and work.

General Electric Co. can be
dited with setting the pace in
e new philosophy of having in-
stry and its managers stand up
d be counted in matters involv-

ing our business climate. It has a
government relations department
which keeps up to date on political
trends and developments, analyzes
pending legislation, and advises and
assists local plant managers in their
daily relations with local, state, and
federal government officials.

In Syracuse, N. Y., J. J. Wuerth-
ner Jr., then community activities
manager for GE's Electronics Park,
developed with other area business-
men and industry managers a
course in practical politics which has
become the model for most other
courses.

Highlighting the need for the
course was a business climate sur-
vey of the Greater Syracuse area by
125 top industrial executives. These

unfavorable factors stood out: High
corporate taxes, high state income
taxes on the individual, above av-
erage costs of unemployment and
workmen's compensation, generally
unfavorable attitudes by many
groups toward business and indus-
try.

The report was given to the
Manufacturers Association of Syra-
cuse. Because nearly 90 per cent
of the questions asked in the survey
involved areas of action by legisla-
tive and political leaders, state and
local boards, commissions and other
government bodies, the association
formed the practical politics task
force headed by Mr. Wuerthner.
(He was recently transferred to
GE's executive offices in New York



Practical Politics: It's Good Manager Training

Industry doesn't operate in a vacu-
um. An effective manager knows
more than the technical details of
his job and industry—he knows the
importance of his community and
government.

"That's the philosophy of Elco
Bolt & Screw Corp.," says Dean
Hellefsrud, purchasing agent.
"We're using the practical politics
course to launch a junior executive
development program. Attendance
at council meetings and discussions
with precinct committeemen have
given us new perspectives."



Participation Is Part Of the Job

"To be effective, you have to par-
ticipate too," says Alan C. Mattison,
president of Mattison Machine
Works.

An active member of his political
party in Rockford, he readily re-
sponded when asked to serve on the
school board—members are ap-
pointed by the mayor. "Our school
system is a \$12 million business,"
he relates. "Of course the job is
time consuming, but you gain per-
sonal satisfaction too. We were
able to save over \$300,000 in the
construction of three schools."



Lack Time for Politics? Re-evaluate Your Activities

Managers have too often leaned on
the crutch: "I just don't have time
for civic and political activities."

"Every good manager can find the
time for worthwhile projects,"
stresses Hugo Borgnis, manager of
budget processing, Aviation Div.,
Sundstrand Corp. "Many manag-
ers spread themselves too thinly
and merely 'belong' to many
groups." He suggests: Limit your-
self to those activities which you
feel are most important and in
which you can participate with the
greatest effectiveness.

How's Your Area Business Climate?



INDUSTRIAL FACTORS

	Good	Fair	Poor
Rate of industrial growth	_____	_____	_____
Industrial diversification	_____	_____	_____
Zoning laws	_____	_____	_____
Utilities	_____	_____	_____
Availability of transportation	_____	_____	_____
Police services	_____	_____	_____
Fire protection	_____	_____	_____
Co-operativeness of public officials	_____	_____	_____
Labor quality	_____	_____	_____
Labor availability	_____	_____	_____
Labor climate	_____	_____	_____

COMMUNITY INFLUENCE

	Complete Control	Strong Influence	Moderate Influence	No Influence
General Public	_____	_____	_____	_____
Union members	_____	_____	_____	_____
Local employers	_____	_____	_____	_____
Press, radio	_____	_____	_____	_____
Clergy	_____	_____	_____	_____
Municipal officials	_____	_____	_____	_____
State officials	_____	_____	_____	_____
Congressmen	_____	_____	_____	_____
Educators	_____	_____	_____	_____

as public affairs consultant.)

This was their five-phase plan of action:

1. A primer of practical politics was prepared. It outlines the make-up of national, state, and local governments, how laws are made, how political parties are organized and function.

2. A *tell and sell* dinner meeting for association members and top management of industrial firms was held. Its purpose was to point up the need for the program to top management and to get its support.

3. A two-day seminar was presented for representatives from participating firms. These men, generally middle managers, formed the nucleus of the seminar leaders.

4. An 11-session course was pre-

pared for use by the seminar leaders in conducting programs in their own plants.

5. Follow-up activities were outlined to improve the program and help maintain interest.

How effective was the approach? A questionnaire was sent to 600 "graduates" the day after last fall's election. These questions were asked:

1. Did you participate actively in politics—other than voting—before you attended the seminars? Only 17 per cent responded affirmatively.

2. Did you participate actively in politics after taking the course? A whopping 91 per cent said, yes.

Here are some other interesting facts the survey revealed: 45 per cent did canvassing work; 38 per

cent contributed money to candidates or political parties; 51 per cent attended a political meeting, rally, or campaign event. Remember—these people are businessmen and industrial managers.

You Can Do the Same

You can spearhead the same type program within your company and community. Rockford, Ill. businessmen and industrialists took an approach similar to that in Syracuse. The Chamber of Commerce acted as the co-ordinator of the program—see exhibit on Page 100.

One of the real surprises has been the enthusiasm with which managers have embraced the course. Hugo Borgnis, Sundstrand Corp.

GOVERNMENT

(Rate: Good, fair, poor)

	State	County	Municipality
Financial management	_____	_____	_____
Efficiency	_____	_____	_____
Progressiveness	_____	_____	_____
Attitude toward business	_____	_____	_____
Taxes	_____	_____	_____

COMMUNITY SERVICES

	Good	Fair	Poor
Housing	_____	_____	_____
Schools, colleges, libraries	_____	_____	_____
Hospitals	_____	_____	_____
Health, welfare programs	_____	_____	_____
Banks, hotels, restaurants, shops	_____	_____	_____
Newspapers, radio, TV	_____	_____	_____
City planning	_____	_____	_____

YOUR COMPANY'S COMMUNITY, CIVIC STATUS

	Good	Fair	Poor
Activity in business sponsored projects	_____	_____	_____
Support of youth programs	_____	_____	_____
Support of church-industry programs	_____	_____	_____
Support of education	_____	_____	_____
Support of civic programs	_____	_____	_____
Relationship with city, state officials	_____	_____	_____

Set Your Own Local Goals

But regardless of its initial fascination, the practical politics we're discussing is not a game or fad. Its basic objective is effective organization to improve the business climate. It involves studying your local—as well as the national—situation, analyzing the assets and shortcomings, then setting goals for improvement.

What kind of climate should business be seeking? GE's president suggests these:

1. Honest and efficient government supported by alert and well-informed voters who have the balanced best interests of all elements of the community at heart.

2. Fair taxes for both business and individuals.

3. Conscientious law enforcement which rejects double standards and protects the rights of all citizens, both corporate and private.

4. Equitable pay and benefits for employees.

5. Responsible union leaders.

6. Qualified and responsive people to fill employment needs, with educational facilities to prepare them for a wide range of job opportunities.

7. High quality community facilities such as stores, banks, utilities, transportation, hospitals and health and welfare facilities, commercial facilities.

8. A social and cultural atmosphere in which people enjoy living and working.

9. A friendly, open minded attitude toward business on the part of local people and their elected representatives.

10. Responsible business and industry citizenship.

Ford Does It This Way

Ford Motor Co. has developed a business climate inventory form to aid its local plant community relations committees in appraising their areas. The checklist on Page 102 is adapted from it.

The inventory covers some 35 pages and contains about 180 questions. Some questions require answers which are the opinions of the community relations committee; some can be answered from plant

minar leader (see Page 101) has in his sessions. "We combine our meetings with a dinner starting at 6:30," he relates. "The discussions get so lively that we have a difficult time trying to cut them off by 10:30 or 11."

Why the enthusiasm and interest? For most managers, politics is an unexplored fact of life. Their experience has been limited to high school government classes, occasional voting, and listening to a TV or radio address by a major national candidate.

Check your own experience. Have you:

Written a personal letter to your U. S. senators or congressman?

Attended a city or town council meeting?

• Personally contacted state senators or representatives?

• Met and talked with your precinct or district committeeman?

• Personally canvassed your neighborhood regarding registration?

Those are some of the things you'll be doing in a practical politics course, plus learning how political parties are organized, how a bill originates, and the procedure it must follow to become law. Such programs are readily available. The National Association of Manufacturers has one; so does the U. S. Chamber of Commerce. Many state groups like Illinois Manufacturers Association are presenting programs for members. And you can expect consultants to come up with some too.

records; others require information from outside sources, such as Chambers of Commerce and government agencies.

Ford has 50 community relations committees functioning in its national network of plants—most have completed their climate inventories. From the appraisal, each committee was also requested to outline conditions which it felt could be improved through efforts of the company and other business citizens. Both short (two years and under) and long term goals were encouraged.

One of the basic values of such a survey is that it makes the manager more aware of his community—its assets as well as its shortcomings. It often highlights situations about which he had no knowledge, J. P. Martin, manager of Ford's community relations, points out.

One Ford manager, for example, prides himself in knowing his community, its operations, officials, and leaders. But one question in the survey stumped him—when was the zoning code inaugurated or last revised? Investigation showed that the code in his community was 40 years old and badly needed revision.

You will note that no mention has been made of political parties.

Every executive contacted by STEEL stressed this important point: This practical politics movement is not anti-Republican, anti-Democrat, antilabor, or antiananything. It is true that most executives, Republican and Democrat, feel that labor's influence and power in government are far out of proportion to the number of people represented.

Learn from the Unions

The unions have won that power through hard work, particularly on the part of the Committee on Political Education (COPE) of the AFL-CIO. A real lesson can be gained by studying its activities. It proves the axiom: "Government belongs to those who practice it best."

In its recent *Political Memo*, COPE reported that 600 delegates have attended its political education and action conferences being held coast to coast.

The objective of the practical

How Are Your Community Relations?

DO YOU KNOW YOUR . . .

U. S. senators

U. S. representatives, your district

State legislators, your district

County commissioners, or supervisors

Sheriff

Mayor

City councilmen

Public works department heads

School officials

Key police officials

Chamber of Commerce officers

Administrative heads:

Red Cross, Community Chest, Boy Scouts, YMCA, service organizations, church councils

Local chairman of your political party

Your precinct committeemen

Know his name 1 point Speaking Acquaintanceship 3 points

politics movement in business and industry is to reactivate the large, politically inactive, middle income group. "It's the fastest growing group in the country, composed substantially of whitecollar and middle management employees," said Henry Ford II in a recent talk at Yale University. "This group, by one estimate, amounts to 30 per cent of the electorate. It could be playing a dominant role in politics."

Most executives feel that this group's participation will upgrade the quality of representatives in both parties and achieve a better balance of interest of all segments of the community in government. Business climate improvement will then evolve on its own.

Most metalworking managers are

already active in community relations. Motorola Inc. provides an example of community-relations-conscious managers. A survey of 100 of its middle and top managers showed that over 60 per cent of them participate regularly in their community affairs. The average executive worked with four organizations—one plant's top executive was active in 12! But only seven managers reported participation in political affairs, and that percentage is above the average for most companies.

Ford's Mr. Reid suggests that you re-evaluate your community relations activities. "Being good citizens is not enough," he emphasizes. "The goal should be to become an effective citizen. Don't try for volume in joining groups. Partici-

Recognize Him?

He Evades Community Responsibilities

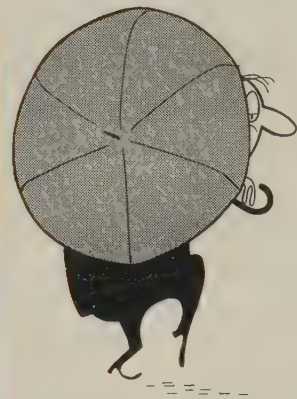
1. **Cozy Clyde** "That's not my problem. Let the do-gooders and politicians take care of it."

2. **Shrinking Sam** "That's too hot for us—can't afford to take sides, or get involved."

3. **Conniving Carl** "Who do we know who has pull?"

4. **Busy Buzby** "I'm too busy—got all I can do to take care of my own job."

5. **Fireman Fred** When the emergency comes (and the damage is done), he will rush in to help put out the fire. Then he disappears until the next one. (Yet he's the best of the group)



ate in those in which you can
work effectively—and political af-
fairs should be one."
How effective can practical poli-
tics for business and industry be?
Examples are in abundance.

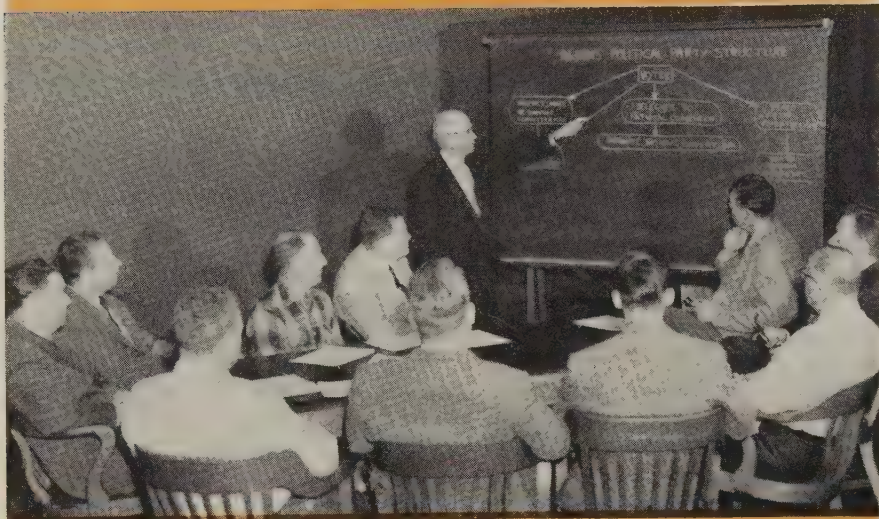
Here's the Place to Start

A few years ago a group of busi-
nessmen in one Illinois county or-
ganized to improve the area's busi-
ness climate. Their activities start-
ed at the logical point—the pre-
sident. By becoming a force at that
level, they gained influence with
the county chairman of the party.
From the start, the county chair-
man knew he could depend upon
his group's full-time co-operation.
Members helped in the solicitation
of funds. They wrote advertising.

They booked speakers. In short,
they exercised the talents of most
managers and businessmen.
Result: The party (Republican)
made a clean sweep of the county
slate—the first in more than 20
years.
The important thing to remem-
ber, the officials emphasize, is that
your activities don't stop with a
successful election. You have fol-
low-up activities, such as the pa-
tronage jobs involved and continu-
ing contact with the elected office-
holders.
One eastern executive offers this
bit of advice: Remember a poli-
tician's first debt is to his district.
"I'm a Republican and recently I
had to call on one of our state sen-
ators to get something done. I
went to the Democrat because he

was more concerned about my area
than the Republican—that was
where he got his start. Result: I
got excellent co-operation—party
affiliation was not involved—it was
the local constituency that was im-
portant in this instance."
One of the biggest eye openers
to managers new to practical poli-
tics is the relatively low caliber of
the party worker at the local lev-
els. Many are minor patronage job-
holders whose only interest is in re-
taining the position. So county
and state officials can exercise ex-
cessive power in many instances.
In most cases, the "party pros"
will welcome you, your time, and
ability. At first you may find your-
self relegated to some minor tasks
while you learn the rudiments. But
your climb within the ranks, you'll

Bastian-Blessing Promotes Grass Roots Citizenship



The dozen men above form the Government Information Committee of Bastian-Blessing Co., Chicago. Their function:

1. Provide all employees basic information on the operations of government—local, state, federal.
2. Investigate candidates for public office and political and legislative issues. Findings are translated into recommendations to the employees.

"Our basic objectives," outlines H. C. Shellhamer, treasurer, "are to make our employees better informed on political matters and to encourage them to become more active in politics at the local level."

The program, started last summer, is nonpartisan. Committee members include representatives from all levels of the firm—top management to hourly paid men.

The committee was particularly active during the fall and spring election campaigns. Illustrating objectiveness, it recommended Democrats for some offices, Republicans for others, and in some instances reported both candidates equally qualified or unsatisfactory. As important issues come up at the local, state, or national levels, the committee investigates and follows up with recommendations on what employees should request from legislators.

"We feel that the employees have welcomed the program," relates Mr. Shellhamer. "There's good evidence that most of them are taking the literature home. We've had many requests for additional material which the individual has sought on behalf of an outside group to which he belongs. Stockholders, who also receive the material, have commended the committee's efforts."

find, will depend pretty much upon such universal values as competence and industry.

What's the law?

As an individual, you have the same rights and privileges as any other citizen.

The Federal Corrupt Practices Act prohibits a corporation from making a contribution or expenditure in connection with a Presidential or Congressional election, primary election convention, or caucus held to select these federal officials; the Illinois Manufacturers Association points out.

Do These

But as a company you can:

- Urge employees to register and vote.
- Circulate public affairs information through newsletters to management.
- Discuss issues through plant publications.
- Invite candidates to tour your facilities.
- Encourage employees to run for public office.
- Assign responsibility for public affairs matters to high-level staff executives.
- Hold informational meetings with political and government specialists to inform your management on issues.

Leaders in the practical political movement report that you can expect amazing results almost immediately at the local level. But substantial impact on the national business climate will come slower—perhaps five to ten years. Success is threatened by two major pitfalls:

1. The businessman and industrial manager may lose his enthusiasm for practical politics—it takes time and work.

2. The inevitable bumps and bruises will scare many away. You must expect some abuse—that's part of practical politics. You may find some managers taking stand opposing that taken by the company—it has to be expected.

The movement to rouse the politically asleep citizen in the middle income bracket is just getting started. The big target: Business climate improvement. That's an important part of your responsibilities as a metalworking manager.

Technical Outlook

May 18, 1959

IRON OUTCLASSES STEEL—A new specialty wrought iron called "MN" is said to have better impact and low temperature properties than most steels. A. M. Byers Co., Pittsburgh, says that manganese content accounts for the superior performance.

TEST FOR COATING THICKNESS—You can determine the right thickness of zinc-rich coatings for maximum protection of steel by a conductivity test devised by D. S. Nantz, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio. The procedure also tells the best concentration and drying time.

EASES METALLOGRAPHIC PROBLEMS—A new polishing procedure which uses diamond abrasives eliminates several problems in preparing metallographic samples: Loss of nonmetallic inclusions, distortion of surface, insufficient flatness. A single basic technique eliminates several specialized procedures, says E. C. Olden, Frankford Arsenal, Army Ordnance Corps, Philadelphia.

TESTS METALLIZED COATS—Eight years of exposure have proved the value of sprayed aluminum and zinc coatings on carbon steel. A test program still underway at the American Welding Society, New York, seems to indicate that all coatings (regardless of thickness) give complete protection.

MULTIPLIES LIGHT NINE TIMES—A transistorized fluorescent system is being tried out on a Cleveland Transit System bus. It provides from three to nine times as much light as hot filament lamps but uses three-fourths as much electricity, says General Electric Co.

WHIPPING TOUGH METALS—Gas plating and plasma arc torches offer great promise for fabricating parts from nickel, cobalt, molybdenum, tungsten, and other refractory metals, says Arthur D. Lytle, vice president of research, Union Car-

bide Metals Co., a division of Union Carbide Corp., New York. Parts can be built up with gas plating over dissolvable molds. Deposits are reasonably thick and 95 per cent dense.

CO₂ WELDS STORAGE TANKS—A yokelike frame, two welding heads, flux-cored wire, and carbon dioxide shielding make for faster, more economical outdoor welding of mild steel storage tanks, says Arcos Corp., Philadelphia. Continuous wire feed eliminates downtime for changing electrodes.

QUICKER CLEANERS—Those who have battled with rust preventives on things that have been stored for some time can appreciate an Army Ordnance solvent cleaner which is said to reduce cleaning time 60 to 70 per cent. A similar development for loosening carbon eliminates the need for phenols, creosol, and chlorinated solvents used in today's commercial degreasers. You can get the formulas from the Army's Coating & Chemical Lab., Aberdeen Proving Ground, Maryland.

NEW REFRACTORY MATERIAL—Particles of graphite bonded with silicon carbide are the latest lightweight entry in the superrefractory field. The product is made by the Carborundum Co., Niagara Falls, N. Y., for use on high speed rockets and aircraft.

ALLIS-CHALMERS SWITCH—A new electronic relay designed with commercial components is said to be the first major departure from conventional induction relays in 50 years. Allis-Chalmers Mfg. Co., Milwaukee, expects to use the design on its latest switchgear.

NUMERICAL CONTROL MARCHES ON—An order for 50 numerical control systems makes Burg Tool Mfg. Co., Gardena, Calif., one of the largest buyers. To date, it has ordered 75.

FASTENERS: Make or Buy?

Small parts seem like natural operations to keep your idle capacity busy, but they may prove to be a luxury. Draw on the fastener maker's knowledge; it may save you money.

Your answers to these questions developed by the Industrial Fastener Institute will give you a clearer image of your production-profit picture

The Part

Is its design a factor in assembly?
Is design changed frequently?
Can it be made in one piece?
How much metal (including scrap) is used for each part?

Its Production

What's the volume?
What additional capital equipment will you need?
Will your facilities handle higher volumes?
Are materials readily available? Will they continue to be available?
Will part redesign speed assembly or save materials?
Does volume fluctuate suddenly?
Do you have enough floor space for equipment and inventory?
Are your quality control facilities comparable to those of outside sources?

Are you equipped to salvage or divert parts to other uses?
Will your machine operators need extra training?

Its Tooling

Is your staff skilled enough to design, tool, and produce the part?
Do they have the knowhow to institute design changes?
How many operators will you need for emergency production?
How do your die costs compare with labor costs?

Its Profitability

Have you checked your total costs against those of outside vendors?
Are your costs based only on current market prices?
What happens if material and labor costs go up?
What prices are you paying for alloys?
What volumes (materials and production) do you need to get a price break from a supplier?

PRODUCING FASTENERS and other small parts for your product seems like a natural for captive operations, particularly if you have idle capacity.

But Frank Masterson, president, Industrial Fasteners Institute, Cleveland, claims that 96 per cent of the companies making their own fasteners could buy them cheaper from fastener manufacturers.

Volume production, the ability to change over with new designs, and the ability to buy materials in volume tend to give fastener mak-

ers a cost edge over captive shops in the production of small parts, explains Mr. Masterson. He adds that companies looking for captive business tend to underestimate their floor space requirements for stocking inventory and the cost of supplemental annealing or plating facilities.

Salvage costs are another hidden factor. Mr. Masterson cites an Ohio firm that decided to make its own screws. It produced 250,000 screws with faulty threads and had no means of salvaging them. A

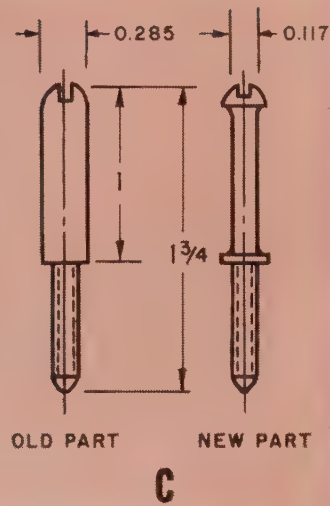
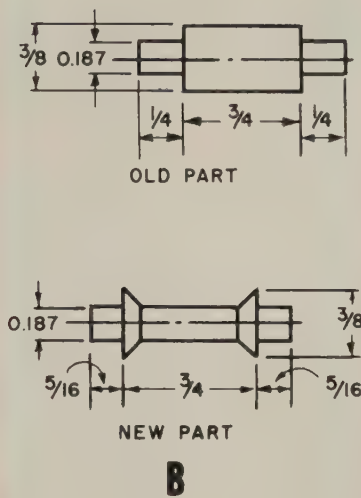
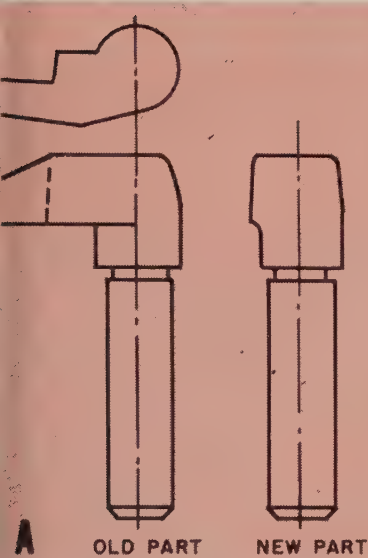
fastener maker would be able to divert the screws to other operations—possibly resize or recut them to absorb some of the loss.

• In efforts to cut costs even more fastener makers are turning to cold heading.

The firms usually have enough volume to justify the capital investment required—but a captive operator often has to continue with screw machines. As the examples above indicate, this can be costly.

Another example is a Connecticut

Redesign or new methods may tip the balance from make to buy



These examples show how manufacturers can take advantage of specialized outside knowledge of materials, design, and fabricating techniques:

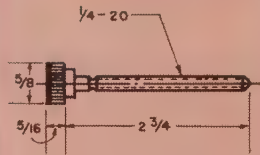
A—Throttle lever for automatic transmissions was formerly two parts with a cast iron head manually assembled to a steel shaft. It is now produced in one piece by cold heading. The cost is roughly 60 per cent less.

B—Stainless shelving spacers were volume machining products. They are now made by cold double heading operations. Saving in scrap metal is \$4.50 a thousand; total saving on part adds up to 34 per cent.

C—Redesigning a mounting screw to include collar and slotted head for cold heading dropped costs 41 per cent.

	MACHINING	COLD HEADING
Stock requirements (lb)	298	69.5
Finish weight (lb)	65	69.0
Wasted stock (%)	77	0
Production (pieces per machine hour)*	210	3864
Costs per 1000 pieces in quantities of:		
5000	\$80.37	\$20.59
25,000	63.14	17.80
50,000	61.39	17.14
100,000	60.45	16.78

*First operation only.



The table at left indicates estimated cost differences when producing this special knurled head bolt by machining vs. cold heading.

it firm which was producing sub-assemblies under contract. One component was machined in four annual lots of 25,000 each at a cost \$33 per thousand. Collar and non thickness and over-all length were vital for fastening operations. When the firm was told to cut

costs \$2000, it called on a small parts specialist who shifted production to cold heading without sacrificing tolerances. Costs were reduced \$8.58 per thousand, saving the order. Before you decide it's cheaper to make than buy, cost out your pro-

posed operations against the checklist. You may find it will be better to let someone else do the job. If you're dealing with large volume, an outsider often can give you price discounts that will make up for any initial savings via the do-it-yourself route.

New Finishing Material Conforms to Shape of Workpiece

- One user reports a 25 per cent cost reduction in his finishing line. Production is up 50 per cent.
- You can use it for automatic, semiautomatic, or hand finishing.
- Maker says it can replace buffing and polishing for final finishing.
- It's light and can be used for portable and touch-up work.
- Material is a cost cutter on pickling lines. You get cleaner metal faster.

LOOKING for ways to cut finishing, cleaning, or pickling costs? You may get help from a new finishing material called Scotch-Brite, a product of Minnesota Mining & Mfg. Co., St. Paul.

Here's the secret: Nylon web is impregnated with fine abrasive. Discs can be ganged on a spindle to any width. (It's also available as sheets and rolls).

The material is about $\frac{1}{4}$ in. thick. Five discs can be combined to form a loading about 1 in. wide. The biggest width commonly used can finish steel sheets 60 in. wide.

It's available in 6, 8, 10, 12, and 14 in. discs. Very fine, fine, medium, and coarse types are made.

• It can produce a unique finish at a lower cost than other finishing methods, says the maker.

The material is already in use on stainless steel, plus aluminum, zinc, brass, copper, titanium, and other nonferrous metals.

• Big advantage: It effectively follows conformations.

Stainless steel window frames are one example. Finishing costs are at least 25 per cent lower than they are with other finishing materials, says Flour City Ornamental Iron Co., Minneapolis. Its polishing line production was increased by 50 per cent. With one pass under the material and dissimilar mill finishes (all rated as 2B) are given a consistent piece-to-piece finish.

• It's suitable for use on automatic, semiautomatic, and hand operations.

The company says the material can replace buffing and polishing compounds for final finishing. It is light and easy to use with portable tools. Finishes damaged in shipping or assembling can be easily blended on the job. All the difficulty is taken out of matching finishes, says 3-M.

Items now being finished on a production line basis include aluminum extrusions, diecastings, tubing, forgings, stampings, and sheets. Both copper and stainless sheets and tubing are being finished. The material is said to be suitable for the finishing of furniture, restaurant fixtures, elevator and escalator trim, jet blades, and food equipment.

• On pickling lines, the material speeds up operations, produces cleaner steel.

Stainless steel producers using the material say their line speeds are nearly doubled. Cleaner strip than ever before is reported by one user. Indications are that it gets to the bottom of the scale pits better than materials now used by steel plants.

The strip is exposed to the brushing and cleaning between pickling tanks. Scotch-Brite is not intended for stock removal.



...e finishing material can be used for offhand or automatic
...ishing operations. It's available in discs, sheets, and rolls



...e 18 in. wide loading uses about five discs per inch of width
...ith spacers). Here it's in working position over stainless win-
...w frame parts. Finish on the steel is 2B

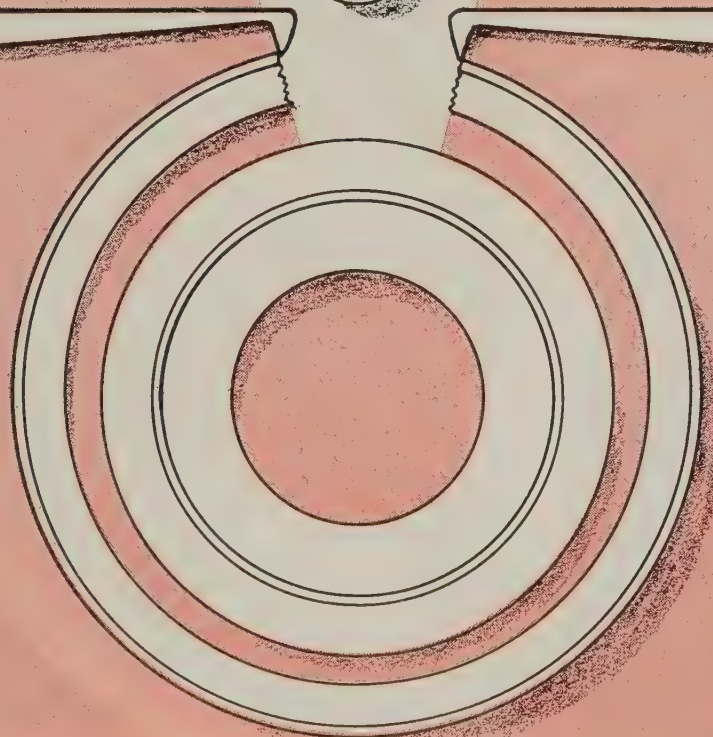


It conforms easily to the shape of nearly any work-
...iece. Channels and grooves are easily finished

Split Bearings Solve Special Jobs

Increased load capacity, relative space and weight saving and merits of single fracture type. Double fracture type can be assembled where solid race bearings can't be used

Special loading technique allows three extra balls to be placed in this bearing. It increases load capacity 35 per cent, extends bearing life, and keeps its size down



NEED a bearing that will give you increased load carrying capacity without increased size? Or a bearing that can be installed where conventional types cannot be used?

Split ball bearings satisfy both conditions. Specialty items, they will cost you more than conventional bearings, but they can eliminate costly designs that will more than pay for the difference in price.

- Split ball bearings are produced in two types: Those with a single fracture and those with double fractures.

In single fracture bearings, the outer ring is broken across its cross section in one place. In double fracture types, both inner and outer rings are broken in two places.

Major advantage of the single fracture construction is that it permits maximum assembly of balls into the races, increasing the capacity of the bearing.

The double fracture ball bearing can be assembled in places where a solid race bearing cannot be used. This type of bearing is essentially a solid race bearing that has been cut in two and then reassembled by holding screws.

- Once a fractured bearing is assembled, it can be treated the same as a solid race bearing.

Split Ballbearing Corp., division of Miniature Precision Bearings Inc., Lebanon, N. H., explains why. To split a bearing, we score the ring (not the race) and expand it in a special machine. The result is a clean fracture at the scored line. Under a microscope, the fractured faces show thousands of metal crystal irregularities which act as dowels in positioning and realigning the faces when they are brought together.

The outer race can be held together at the fracture by a retaining ring, or by pressing the bear-

g into a housing to prevent reading under thrust loads.

Single fractured bearings have increased load carrying capacity.

Relative space and weight savings are possible. A split bearing with a smaller outside diameter and cross section has the same capacity as a larger conventional type.

Maximum capacity is provided with a full ball complement. Minimum torque may be had by using alternate ball construction (alternate balls are undersize and act as spacers). High speeds may be obtained by using solid retainers.

Integral shields that are impossible to use in conventional type bearings can be added to provide built-in shielding and a more rugged cross section with no increase in size.

Applications of fractured bearings can result in substantial cost savings.

A manufacturer of aircraft hydraulic control pumps was experiencing premature product failure because the margin of capacity of its bearings was too close. Substitution of fractured bearings extended the life of the pump and validated the manufacturer's compact design.

For most applications, overhead pulley wheel conveyors will perform satisfactorily with low cost, conventional bearings. In one case, heavy parts had to be carried that overloaded the capacity of the standard bearings. The first attempt to solve the problem was to use double row ball bearings which were ground. But the designer found that fractured ball bearings with a full complement of unground balls would meet the capacity requirements at a lower cost than the double row ground bearings.

A logical use of the single fractured bearings occurs in situations where the conventional bearing cannot give sufficient capacity within available space. The special bearings are used generally when the primary consideration is their extra load carrying capacity, or where the section height of the bearing is so thin that there is no room to fit together the two-piece cage required for bearings assembled by eccentric displacement or filling techniques.

- **The single fracture method offers even greater advantages when used on precision, thin-section bearings.**

Example: Split Ballbearing Corp.'s TCR 25-32 size (2 in. OD, 1.5625 in. bore, 0.281 in. wide) can take 34 balls. That's 15 more than found in a conventional bearing of the same size and type. The split bearing has 62 per cent more load capacity and 400 per cent greater life.

- **In proper design, double fracture bearings can be replaced without tearing down a machine.**

In a compressor where lubrication could not be introduced to the pin on the crank throw, double fractured bearings have been installed with great success. Even though the bearing runs dry, it gives the required life. It would be impossible to install a solid race bearing in such a location. Similar applications are found on pumps.

In many instances, combination of the sealing of the bearing with the outer race has resulted in the development of split ball bearing units that require no housing and serve as pillow blocks.

Coal Thawed by Heat Lamps

HEAT LAMPS are one answer to next winter's coal unloading problems.

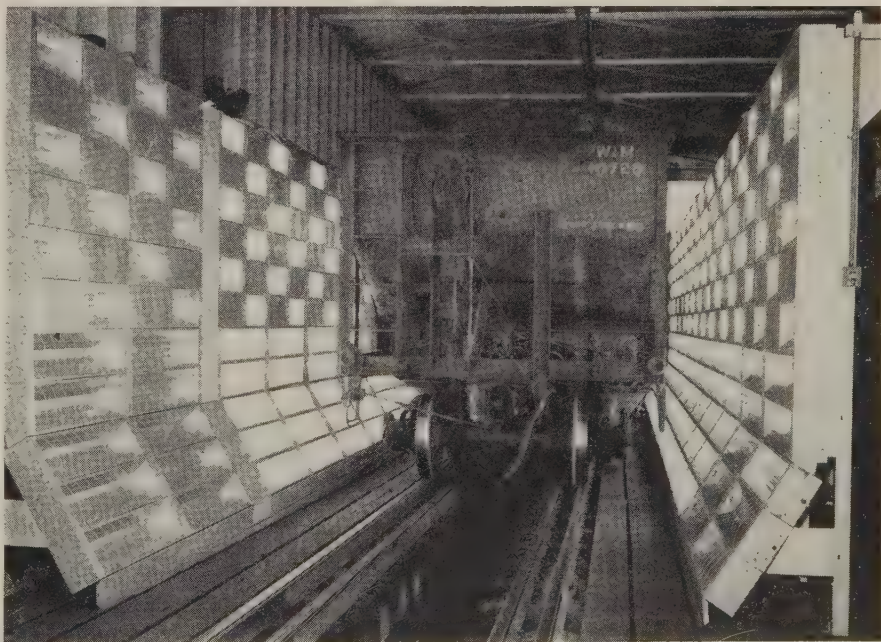
At Western Maryland Railroad Co.'s Baltimore installation, cars enter an oven built by Fostoria Pressed Steel Corp., Fostoria, Ohio, and pass between reflector panels of infrared lamps. Heaviest infrared concentration is at the bottom of the car.

- **Baking Time**—Some cars must stay in the oven longer than others.

Thawing time depends upon temperatures, how solidly the coal is frozen, and the coal's moisture content. Even at zero and below, at least six cars an hour can be unloaded without manual picking.

Western Maryland says the system provides minimum maintenance, greater speed and economy, increased cleanliness, and less damage to railroad cars.

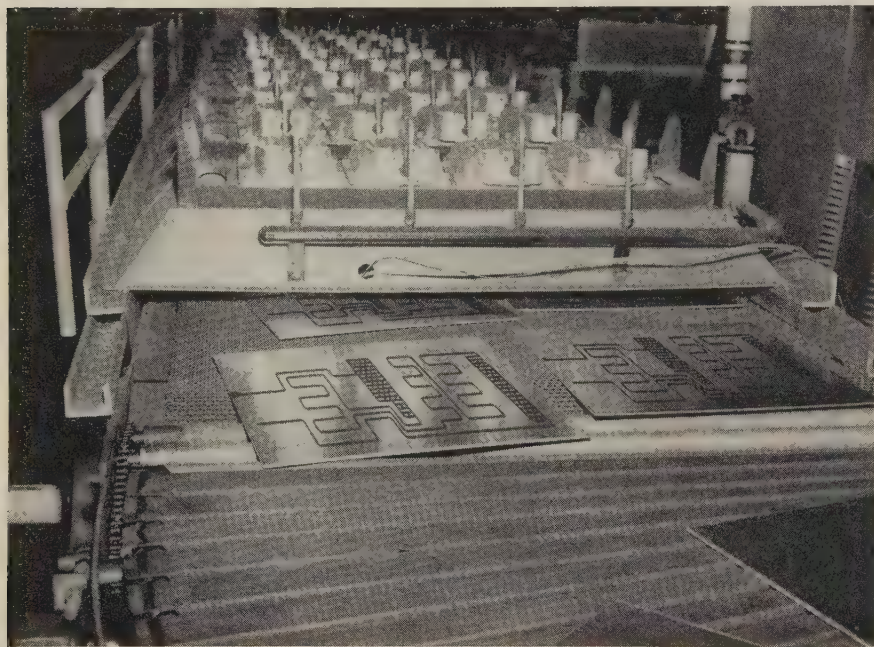
The pencil thin lamps used in this setup are from General Electric Co.'s Lamp Div., Cleveland.



These banks of 1600 and 3800 watt quartz lamps were installed to heat loaded cars, freeing frozen fuel so they could be dumped. Cars were unloaded at a rate of about six an hour in a test last winter

Infrared Heaters Eliminate Tie-up of Drying Conveyor

The gas-fired devices have a ceramic element whose surface reaches 1600° F. Their high efficiency and low fuel costs open up new areas for cutting costs



Bank of infrared heat generators is installed over 22 ft of a conveyor between a printing machine and rolling mill at Reynolds Metals Co. The units dry the metal ink used to print tube patterns on the firm's Tubed Sheet

GAS-FIRED infrared heaters are solving a number of heating problems in industry.

They are being used to preheat metals before brazing or soldering. Manufacturers are using them to dry organic finishes. During the recent floods in Ohio, maintenance men found them to be ideal for drying out electrical motors and other equipment.

Reynolds Metals Co., Louisville, installed the infrared heaters to dry metal ink. The change eliminated a production tie-up and reduced drying costs.

- The heaters (Perfection-Schwank) are the same type used for space heating.

They're made by Perfection Industries, a division of Hupp Corp.,

Cleveland. When used for heating high-bay building and other hard-to-heat factories, they operate at 100 per cent efficiency. There is no loss in a transfer medium such as air, water, or steam; fuel energy not converted to infrared rays is diffused through space by natural movement of air and gases.

At Reynolds, the units are installed directly over a conveyor line between a printing machine and rolling mill. They're used to dry the metal ink used for printing tube patterns in the company's Tubed Sheet, a sheet aluminum with integral tube circuit. The product is made by printing a reduced size circuit pattern on one sheet and bonding another to it in a rolling mill. Under pressure of the rolls, the sheet and pattern are expand-

ed to four times their original size. The ink prevents bonding of the printed surfaces which are expanded into tube circuits by fluid under pressure.

Because of the high capacity of the gas units (48,000 Btu each) it was possible to install a bank of 480,000 Btu capacity over 22 ft of conveyor. The heaters operate at high efficiency, converting 60 per cent of fuel input into infrared rays of lengths (1.5 to 6 microns) readily absorbed by the metal ink.

- The infrared wave length is generated by an element surface temperature of 1600° F.

The ceramic, invented by German scientist Guenther Schwank and developed into practical heating units in this country by Perfection Industries, is perforated with 200 holes per square inch.

Air drawn from the atmosphere and gas are mixed in a chamber behind the ceramic and passed through the holes. A separate flame burns at each hole. The entire combustion takes place within 1/8 in. of the ceramic face. The rear surface of the ceramic doesn't exceed 400° F.

Heaters are ignited by a pilot light and protected against escaping gas by a pilot heated thermocouple which closes an electrical solenoid valve if the pilot should fail.

- The heaters cut operating costs and solved the drying problem without revision of the production line.

With about half the drying being done by gas, operating costs are down one-third. Reynolds plans to replace the remainder of the units as they burn out. When the entire line is gas operated, drying costs will be one-sixth that of the original installation. The infrared heaters last indefinitely, requiring only occasional cleaning for maintenance.

The difficulty experienced with the original system was insufficient heat. To remedy the situation would have required more heaters and lengthened conveyor travel, or more powerful heaters. Reynolds obtained the heat it needed by substituting the bank of ten, gas fired heaters for four banks of its original units.

NEWS!



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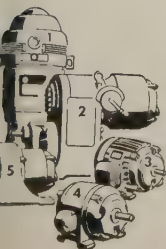
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Reactor Treated Hot Metal Boosts Output of Steel

Rotary unit, developed by Diamond Alkali Co., has been in pilot operation over a year. It may boost output as much as 15 per cent for open hearths, 50 per cent for electrics, by removing silicon and sulfur from hot metal. It may be used later to remove other impurities, or add desirable elements. Molten iron, held against the refractory lining by centrifugal force, protects it from the alkali. Fumes are controlled by an exhaust system.

REMOVAL of silicon and sulfur from hot metal before it's put into steelmaking furnaces may boost output of open hearths as much as 15 per cent, electrics as much as 50 per cent.

A new process makes wash metal by treating molten iron with an alkaline material, iron ore, and oxygen, in a rotary reactor. It was

developed by Diamond Alkali Co., Cleveland.

- The process is continuous; a rotating cylinder brings the molten metal and treating agents together in a turbulent flow that speeds up reaction.

The rotating cylinder of the reactor is a steel shell, lined with re-

fractory material. It turns fast enough to hold hot metal and alkali against its inner surface with a force of 6 Gs.

Rotor speed varies with diameter. Cascading of molten metal is minimized, so the alkaline agent can't damage the rotor lining.

Molten metal, alkali, oxygen, and iron ore travel in a spiral path through the rotor, which serves as a metal storing, metal advancing zone. The rotor, hot metal, and treating agents rotate at different speeds. Result: Shearing, or rubbing action. That, with inherent flow characteristics, causes turbulence, so the metal and treating agents constantly present fresh surfaces to each other. Most reactions occur in the rotor.

As the stream of molten metal and alkali leaves the rotor and enters the collection hood, it's broken into small particles, and further reaction takes place. Drops of wash metal are then collected in a continuous stream.

- Treating agents are automatically dispersed over the molten metal.

Various alkaline agents have been used to remove sulfur from hot metal. Most popular: Commercial sodium carbonate (soda ash).

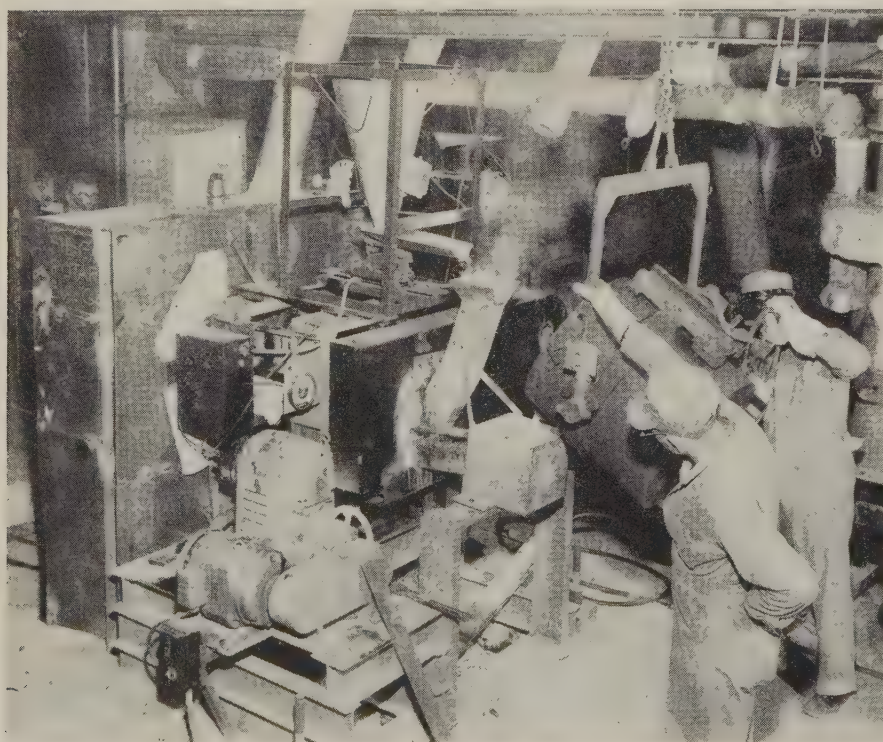
A stronger alkaline material, like caustic soda, does a better job of treating the metal, but precautions must be taken to keep it from attacking the refractory lining of the reacting vessel and to prevent caustic soda fumes from irritating personnel.

In earlier chemical methods, the alkaline material had to be dispersed in the metal bath. It was done by adding it to molten metal in the runner from the furnace, or by adding it to the ladle, then pouring the metal from one ladle to another.

In the rotary reactor, the treating agent doesn't have to be highly dispersed, and it doesn't come into contact with the refractory lining of the unit.

Fumes from caustic soda or other chemical agents which are in contact with molten metal for extended periods lose their offensive properties. They can be disposed of with no hazard to personnel.

- Pilot reactors have been operated (Please turn to Page 122)



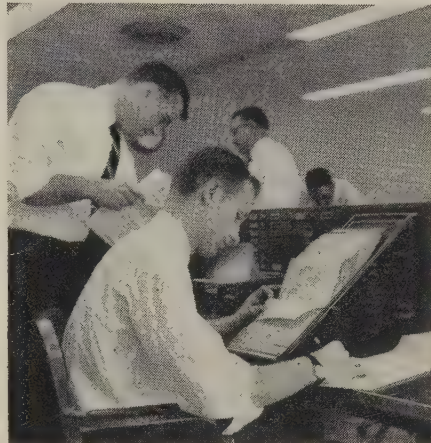
In pilot plant, operated at Battelle Memorial Institute, hot metal and alkaline agent are fed into a 10-ton-per-hour rotary reactor

keeps 16,000 specialty steel items flowing from mills to local warehouses for immediate delivery to you

Every day, thousands of specialty steel items flow from Crucible mills to Crucible's 31 strategically located warehouses — keeping local stocks at levels that meet customers' *maximum* needs. Here's how these continually-replenished stocks are helping one steel buyer today. He says:

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All 31 Crucible warehouses offer in-stock delivery of approximately 16,000 specialty steel items, ranging from tool steels to stainless sheet and wire. They're able to maintain these high inventories because they're part of Crucible's completely integrated operation, from mining the ore to steelmaking to warehouse delivery to you. If you'd like to know all the ways these warehouses can serve you, phone or visit the one near you today. *Crucible Steel Company of America, Dept. PE15, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*



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'Steels you ordered yesterday arrive today at your receiving platform — dependably on schedule.



Warehouses maintain modern equipment, like this electronically-controlled flame cutter, for fast processing of specialty items.

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STAINLESS STEELS—Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS—Crucible Max-el® rounds, hexagons, plates and brake die steel
ALLOY STEELS—Bars, billets, strip and sheet
COLD ROLLED CARBON SPRING STEELS
DRILL STEELS—Hollow and solid drill steels
ALUMINUM EXTRUSION DIE STEELS
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PERMANENT MAGNETS

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over a year. Cost of larger production units has been estimated.

Diamond Alkali engineers have operated a 10 ton per hour reactor at Battelle Memorial Institute, Columbus, Ohio, and a 60 ton per hour unit at W. O. Larson Foundry Co., Grafton, Ohio.

The reactor has not yet been applied to partial reduction of iron ore and decarburization of hot metal. It may be used later in those applications. It can reduce sulfur content from 0.044 to less than 0.03 per cent and silicon from 1.27 to 0.40 per cent.

The reactor may be licensed from Diamond Alkali for removal of silicon and sulfur. Some steelmakers or foundry companies may want to develop the unit further for their own special applications.

Costs have been estimated for reactors with capacities up to 150 tons per hour. A capital outlay of about \$250,000 is estimated for two, 150 ton units that could operate in parallel. The price includes accessory and associated equipment.

Scrap Handling Quickened By Hoppers in Floor Pit

Here's one way to cut scrap handling and shoveling time. Put collection hoppers in pits. Empty the self-dumping units with a lift truck. It's being done at Greenlee Bros. & Co., Rockford, Ill.

Greenlee uses a four hopper unit in each of its three machining departments. A sign above each hopper marks it for a scrap type.

Scrap is collected from machines, brought to the hopper in wheelbarrows, and dumped. Before the pits were installed, scrap had to be shoveled from the wheelbarrow to the hopper.

Lift trucks use a hook to pull full hoppers out of the pit. After the hook is taken off, the forks are driven under the hopper, which is carried to the outside scrap bin.

The fork lift driver can quickly dump the load by releasing a lock handle on the hopper. It tilts forward to dump and automatically returns and locks upright.

The hoppers are manufactured by Roura Iron Works Inc., Detroit.

Ultrasonic vs. Eddy Current

A wide range of factors affect selection. Some standards are still being studied. One firm spent ten years investigating both methods before it made up its mind. It chose eddy

EDDY CURRENT testing has really paid off for Reading Tube Corp., Reading, Pa.

Products are inspected twice as fast (more than 700 tubes an hour) compared with the former method. Quality is far more reliable since the new device catches invisible flaws and pinholes not turned up previously. Cost: About \$5000.

• How it chose method.

Reading Tube took ten years in deciding to invest in an eddy current tester. Franklin S. Catlin of Magnaflux Corp., Chicago (the supplier) points out some of the reasons why Reading took so long. He says the best test for a particular type of tube depends on sensitivity required, acceptance and rejection standards, and defect sizes. In many cases, such standards have not been established.

Several nondestructive tests are used to test tubing—including ultrasonic, magnetic current, fluorescent and dye penetrants. For example, theoretically penetrants can detect any open defect no mat-

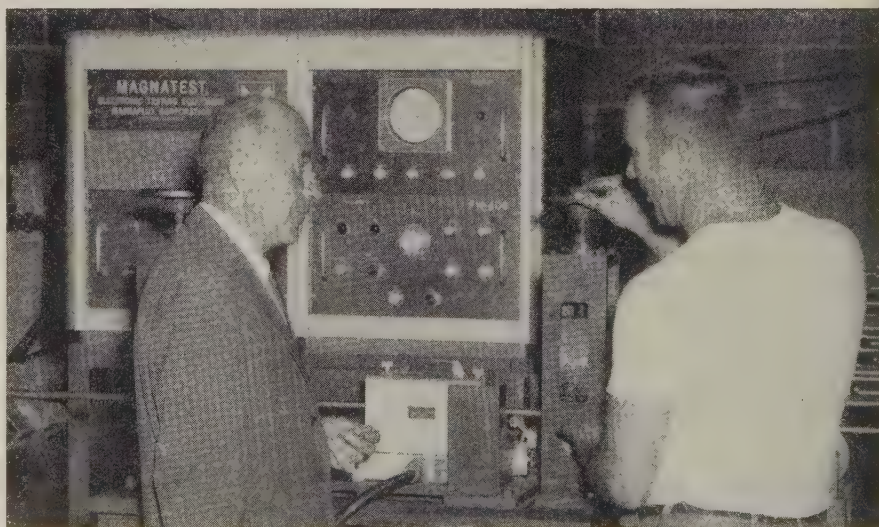
ter how small. Both eddy currents and ultrasonics have practical lower limits.

• Critical applications require several tests.

Most evaluation programs for the several testing methods are not yet complete, says Magnaflux. But high quality tubing, such as that used for nuclear reactors, can be tested by two or more methods. In some cases, all methods are used.

Sensitivity varies with equipment. Outside coils on tubing for eddy current tests compare favorably with ultrasonics on the outside diameter but are less sensitive than ultrasonics applied on the inside, says Mr. Catlin. He also points out that eddy currents with both internal and external coils are superior to ultrasonics although scanning the tube twice using different angles for the ultrasonic beams is equally sensitive. Speed, however, is cut in half.

In general, eddy current testers operate at 320 fpm, compared with 45 or 50 fpm for ultrasonics.



Operator is adjusting feed roll of new eddy current tester which detects flaws in tubes traveling at 320 fpm. The unit doubled inspection rate for Reading Tube

Pickling Basket Life Upped 5 Times by Stainless

Pickling basket life was increased five times by a switch to stainless steel at Zallea Bros., Wilmington, Del. When the baskets were installed in 1956, expected life was seven years—a goal that may be surpassed.

The baskets are in a pickling tank about 4 hours a day. Maintenance problems are so low that the company sees no reason to keep spares. Previously used equipment lasted months before extensive repairs were required. Further repair and maintenance were required at four to six week intervals.

The baskets were frequently damaged in handling. The coating would wear and expose the structure to acid attack. Trapped acid under the ragged areas of the coating caused more corrosion.

Operation—Stainless steel expansion joints and other assemblies are carried through pickling or passivating baths following annealing. A hot sulfuric acid pickle, followed by cold hydrofluoric-nitric pickle, removes annealing scale and passivates the surface. If scale removal is unnecessary, a nitric acid passivating treatment is used.

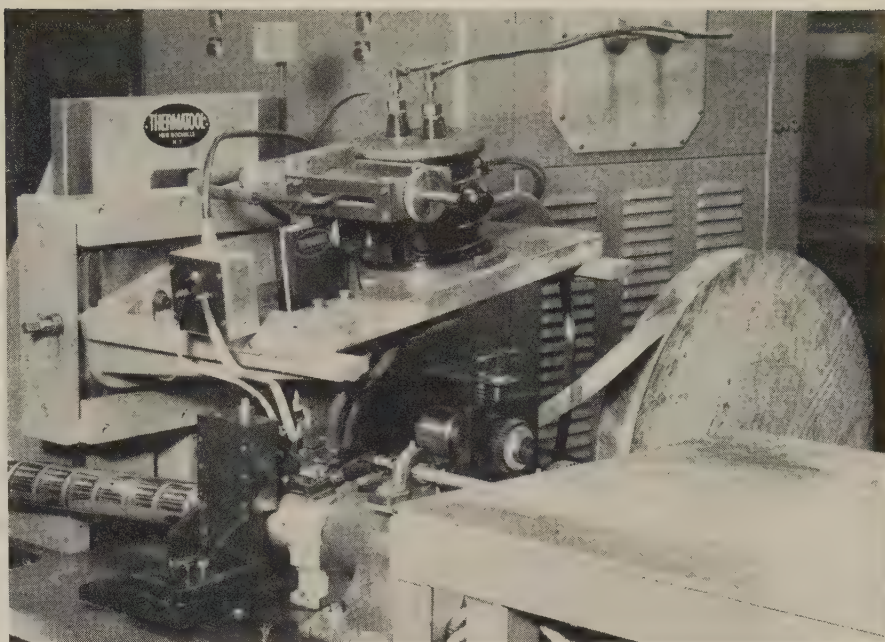
The baskets were designed by Zallea Bros. and Cambridge Wire Cloth Co., Cambridge, Md. They were fabricated at the Cambridge plant.

New Vinyl Finish Resists Many Stains

A new, nonstaining finish on a vinyl laminate (called Colomine) is said to resist such stains as ketchup, gentian violet, and ballpoint ink. It's a product of Columbus Coated Fabrics Corp., Columbus, Ohio.

Although the finish was developed primarily for use with white polyvinyl, it is available in other colors and textures. The material can be laminated to steel, aluminum, and other metals.

The company thinks the finish will be of particular significance to the appliance industry.



High Frequency Tube Welder Proves Efficiency

Strip enters forming rolls from right. V-shaped edges pass between sliding contacts which deliver 450,000 cycle current. It joins 1000 ft of strip a minute

A TUBE MILL less than one-fifth as large as conventional machines is demonstrating the unusual potential of high frequency resistance welding.

The maker, New Rochelle Tool Corp., New Rochelle, N. Y., says the new device can weld 0.004 in. strip at 1000 fpm. Two semiskilled operators can make forge welds, lap, mash seam, or butt edge welds with an exceptionally small bead.

- The idea is to make tubing in a spiral.

Using tin plate stock, the little mill can turn out 3 in. tubing at a 150 fpm clip (you can increase speed by increasing power). The machine is on a waist high platform. A motor drive takes strip from a coil, puts it through forming rolls to a set diameter, and delivers an open seam to the welding head. The number of spirals per foot of tubing can be adjusted (the more spirals, the greater the stiffness).

The edges of the metal are formed

into an open vee which moves between two sliding contacts which deliver welding current.

- The principle concentrates heat at the right point.

High frequency current (450,000 cycles per second) makes current travel the long way around. Unlike ordinary direct or low frequency current, which follows the path of least resistance, this type looks for the path of least inductance (a coil of wire has inductance). That is the path from one sliding contact to the lap joint and back to the other sliding contact. Result: All the heat is concentrated at the weld. You need less power, and you get faster welds. In addition, the heat affected area is much narrower, a good feature in stainless and some nonferrous metals.

New Rochelle says the machine can join tubes from 1½ in. in diameter up to any practical size (10 ft or greater). Refinements are expected to make smaller sizes possible.

*Gets 40% savings in
coolant costs by change to*

Standard's Transparent Coolant

ARGON Oil No. 4

Chicago Saws, Inc.
realizes other benefits in
switch to this
Standard Oil product

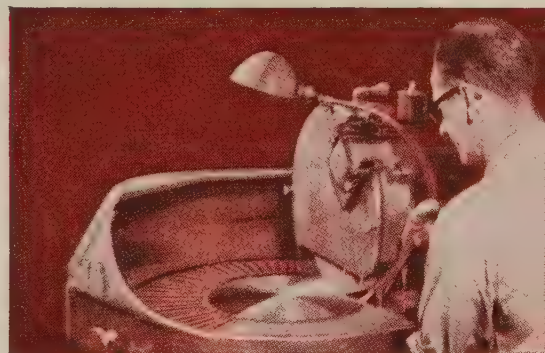


Situation: It all started when a Standard Oil lubrication specialist recommended ARGON Oil No. 4, Standard's transparent coolant to Chicago Saws for use in their grinding operations. This manufacturer of rotary saw blades decided to give it a try. They knew the product was the result of more than three years' work in Standard's research laboratory, and that it had been extensively field tested.

What happened: Using ARGON Oil No. 4 in 100:1 concentration, Chicago Saws was able to reduce coolant costs 40%. They also found the work could be seen more clearly when using this cool-

ant. There was less wheel loading. They also discovered the coolant didn't foam and that its exceptional ability to carry off heat resulted in cooler operation. Faster cuts were obtained with finer wheels. Tolerances were easier to hold. Better finishes were obtained. Wheel dressings were less frequent.

What you can do: Get more information about ARGON Oil No. 4 transparent coolant. Call the Standard Oil lubrication specialist near you in any of the 15 Midwest or Rocky Mountain states. Or write: **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Ill.**



Using ARGON Oil No. 4, Chicago Saws gets better finish at savings of 40% over other coolants tried. Operator is using .004" cut on heat treated Rockwell 60 C steel.

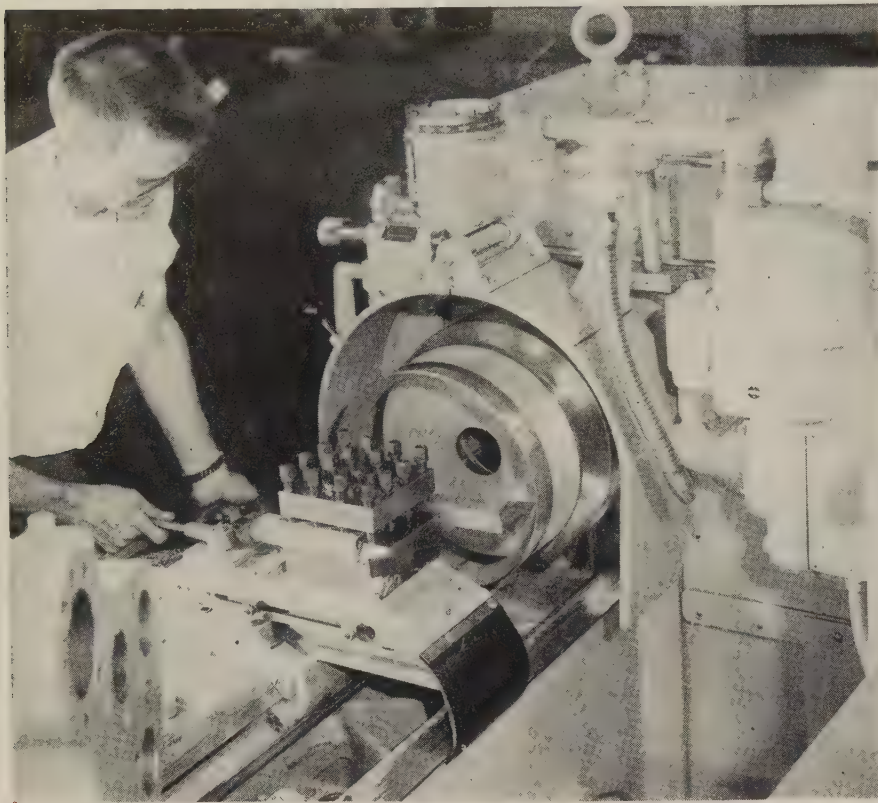
You expect more from  *and you get it!*

Quick facts about
Standard's Transparent Coolant
ARGON Oil No. 4

- Clear, transparent fluid
- All chemical. Does not support bacteria growth
- Unaffected by humidity
- Nonfoaming
- Fire resistant
- Odorless

Standard's Bob Stark and Chicago Saws' vice president Paul Bostrom discuss blades and coolants. Bob Stark is well qualified to work with manufacturers on the use of metalworking coolants. Bob has a chemistry degree from Illinois College plus three years' experience at Standard. He has completed the Standard Oil Sales Engineering School course.

Ten Machines Like This One . . .



ASKING operators to run both old and new machines is like asking a golf pro to use an unmatched set of clubs.

Such reasoning prompted supervisors to replace all 14 turret lathes at the Canning Machine Div., Food Machinery & Chemical Corp., Hoopeston, Ill.

Over-all results: Direct labor costs were cut; scrap losses were trimmed; and savings in both downtime and maintenance were appreciable.

Jack Stevenson, plant industrial engineer, figures the ten new Warner & Swasey machines will pay for themselves in less than five years.

• Problems centered on machines that were both old and unsuited to a new product line.

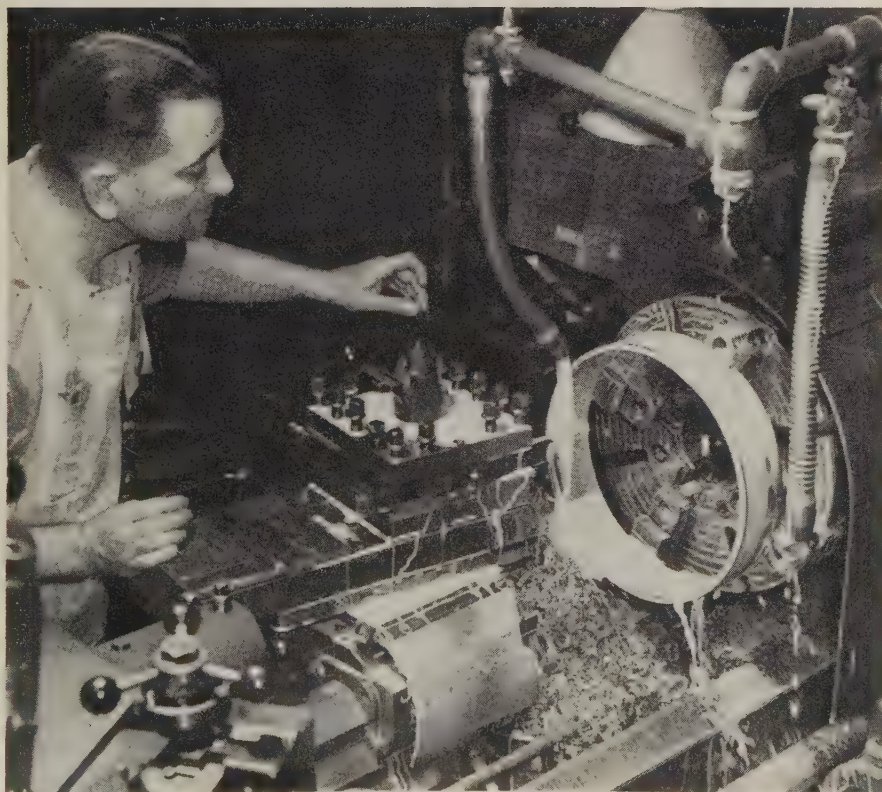
The turret lathe department was made up of 14 ram and saddle machines: Eight ram types, averaging 16 years old; and six saddle types, averaging 19 years. The age and generally poor condition of the machines were the prime factors in getting a study of turret lathe replacement underway. The study was complicated by the fact that since the company's product is special machinery, previous production data couldn't be used for a point-by-point comparison.

Added to that complication was that about 80 per cent of the firm's products were developed within the last ten years—since the machines were purchased.

Augmented by a study of machine speeds and feeds of newer equipment, the engineering survey showed:

1. The company's machines didn't have the speed or power to take full advantage of modern carbides.
2. Machine sizes were larger than needed, meaning that small work had to be run on heavy, hard to handle equipment.
3. Because of the poor condition of machines, operators had to hold

Replaced 14 Like This One



ack on depth of cut to get the size tolerances and surface finishes specified.

Management's decision: Replace the machines with new ones to get consistently high quality work.

Instead of replacing one or two machines a year, management figured it could cash in on extra benefits by having all machines capable of the same performance levels. They reasoned: Since production had little pattern to it, operators had to be moved from machine to machine; the presence of old machines in the department would have a tendency to offset the cutting rates of new machines.

It also seemed logical that it would be easier to get the operators used to higher feeds and speeds on the new machines if the old ones were gone. The new machines could take the greater cutting rates with ease and quiet; the old ones vibrated and chattered.

The first machines to go were the eight ram types.

Early in 1957, four No. 3s, one No. 4, and three No. 5s were replaced with two No. 1 Electro-Cycles, two No. 3 Electro-Cycles, and one No. 4. The 1/2-in. reduction in average spindle size made the machines more compatible with the work; the new machines had the horsepower and speed to permit working at 600 surface feet a minute with normal feeds on free machining steel and 350 sfpm on stainless vs. about 200 and 150 for comparable materials with the old machines.

In the first year, the machines cut direct labor costs better than 90 per cent, and scrap losses were slashed. Although the savings were satisfactory, Mr. Stevenson says they felt sure the savings would grow as operators became more familiar with the new machines and their capabilities. Based only on the first year of operation, the five new machines showed a payoff period of considerably less than five years.

The ram type replacement success story led to the replacement of mangle type machines.

Shortly after the ram type machines were installed, the six old mangle types (two 2-As and four

1-As) were sold and replaced with three new No. 5s and two 2-As. The five machines dropped direct labor costs; scrap loss was slashed; and downtime and maintenance costs fell. The machines showed a payoff period of less than five years.

- The new machines also have resulted in a bonus in capacity.

Although the department has fewer machines (10 instead of 14), an effective increase in lathe capacity permitted the company to gain 1000 extra hours. Used to take up slack periods, it eliminated the need for laying off three men and precluded the rehiring and training expense that would be met when the slack period ended.

Welder Whips Fitup Problem

Detroit firm combines cam control with a probe coupled to magnetic tape to guide welding heads. Scheme overcomes deviations up to 3/8 in.

POOR FITUPS aren't as much of a problem in welding as they used to be. Several makers of welding machines have systems that automatically compensate for gaps, deviations in dimension, and warping.

Example: Expert Welding Div., Expert Tool & Die Co., Detroit, has a system which uses magnetic tape and a tracer to overcome the problems. Self-powered welding heads accurately follow contours like those on automobile chassis frames.

- A loop of magnetic tape stores deviation data reported by a mechanical probe.

As the welding carriage moves, a sensing finger or probe follows the weld contour. Its movements are transmitted to a differential device which electrically presents deviations from the design to a magnetic tape for storage.

A few inches behind the recording head, a pickup feeds the information from the magnetic tape into the positioning equipment for the welding head.

The probe is put ahead of the welding head to keep spatter off the probe. The distance between head and probe is the same as that between recording and reading heads on the magnetic tapes. A loop of tape rather than a conventional spool eliminates rewinding.

Although CO₂ shielding is used, the system works with all other types of arcwelding.

- Heads are guided by cams in a new frame side rail welder.

The driving and guiding mechanism for the welding heads are mounted on the top or crown part of the machine. Each head has its own carriage, separately driven through a rack and pinion. Each has its own rollers which follow cams made to print dimensions. Horizontal guidance is entirely by cam; vertical operation is modified by the tape tracing system.

Bronze clamps hold the parts to a platen. Air-operated, they apply pressure along the whole side of the parts. They are adjustable.

- The machine automatically positions side rail halves.

To start the operation, an operator loads right and left halves of a 12 ft side member. The air clamps press the parts together for welding. A transfer mechanism carries the part to the welding position and to an unload station equipped with hydraulic walking beam transfer.

With the platens in position and side rails clamped, six welding heads move into place to weld the entire length (two seams). When welds are completed, the machine cycles itself for the next part.

Crossmember channel halves are welded the same way in a similar machine which has only four welding heads, two for each side. Controls are cam programed, modified with magnetic tape as in the larger version.

RANSBURG

Electro-Spray...

**PROVIDES 50% PAINT SAVING
(over the former dip method)
in the finishing of KAY-MAR
DINETTE FURNITURE**



A high quality, long-lasting finish is applied to tubular chair frames as they make a loop around the Ransburg No. 2 Process reciprocating disk in the finishing department at Kay-Mar Industries.

● Kay-Mar Industries, Cassopolis, Michigan, switched from the dip method to Ransburg Electrostatic Spray Painting because they wanted to improve the quality of the finish on their metal furniture line.

Now, with electrostatic spray painting, they get a heavier, more uniform application, which was not possible with former dip. With electrostatic, they are able to use metallic coatings with higher metal content. In their magazine advertising to the mobile home industry, they proudly say: "Finest finish in the industry at no additional cost to you!"

Electrostatic provides other advantages at Kay-Mar. They picked up some additional—and much needed—floor space when dip tanks were removed. Their insurance rates were reduced because of improved "housekeeping" conditions. Frequent color changes are made quickly and simply, and rejects—which used to run 1½%—are reduced to less than a quarter of one per cent.

NO REASON WHY YOU CAN'T DO IT, TOO!

Let us test prove the advantages of automatic electrostatic spray painting on your products in our complete laboratories. No obligation. Call or write for our No. 2 Process brochure, which shows a variety of automatic painting installations on a wide variety of products. Or, if your production doesn't justify automatic painting, let us tell you about the new Ransburg No. 2 Process electrostatic hand gun, now widely used by both large and small manufacturers.



RANSBURG

RANSBURG

Electro-Coating Corp.

Box-23122, Indianapolis 23, Indiana

Drilled, Tapped Holes Give Better Service, Lower Cost

Cost saving and product improvement went hand in hand when drilling and tapping outperformed more costly methods of producing setscrew holes in molded polyester parts.

The parts are two dielectric body castings (9 x 7 x 2 in.) with a 7/8 in. wall which girdles and clamps the heavy duty welding powerpack made by Kirkof Mfg. Corp., Grand Rapids, Mich.

The clamped and girdled package of copper extrusions, castings and winding sustains drastic heat liberations. At each welding shop (up to 1000 per hour), the copper contorts and sufficient heat is generated to melt the unit. (Water is pumped through the cored secondary.)

Eight ¼ in., No. 20 setscrews are used.

Drilled and tapped setscrew holes were chosen for their firm holding power. Other methods produced too sleek a surface, cost more, or could possibly let setscrews back out under jolting in prolonged service and cycling heats of high current surge.

● **Material Part of Secret**—The low pressure, reinforced molding compound helped make the operation a success. Called Thermaflow (by Atlas Powder Co., Wilmington, Del.), it's loaded with glass fibers and fillers to add strength and structure.

The fiber ends and filler grains are exposed by the cutting action of the tap. They grip screw threads in assembly and give maximum insurance against loosening under vibration in service.

Another design tip involves a drilled rather than cored hole in the corner of the mold. The purpose was to make it easier for the Thermaflow to flow evenly into the corner of the mold.

The reinforced polyester doesn't have to surround a pin in the mold and rejoin on the opposite side in tight quarters, as it would if this hole were cast. Drilling is preferred over molding to get strength at the corner of the part.

The hole accommodates a tierod.

STEEL

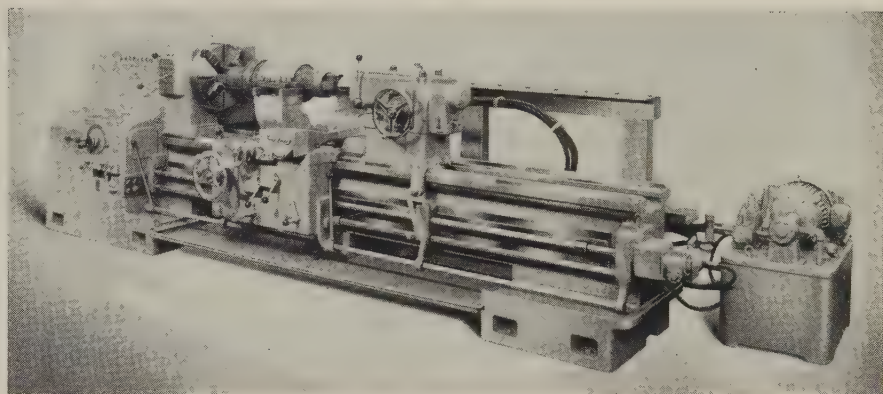
Lathe Contours Shaped Rolls Automatically

ACCURATE contour machining of shaped rolls up to 33 in. in diameter can be done on this new hydraulic duplicating lathe.

The machine has a template-controlled hydraulic duplicating mechanism and 90 degree tool slide that handles all roll tracing work. Carriage feed is continuous, with the rate of feed automatically and steplessly varied (modulated) as the steepness of the contour varies.

Feed rate ranges from zero on a 90 degree shoulder to the maximum preset by the operator for a straight diameter. Result: A stepless generation of the contours on the roll. Final finishing or touching up are not necessary. Expensive form rolls are eliminated.

The machine may be instantly converted to standard engine lathe



operation by switching a conveniently located lever at the head end. The tool rest permits mounting a full length support under the extended tools which must be used when the grooves in the roll are deep.

The roll duplicating lathe uses

the latest American de Luxe Model Pacemaker Lathe as the basic machine with the hydraulic duplicating equipment built in to form a packaged unit.

For more information, write American Tool Works Co., Pearl Street, Cincinnati 2, Ohio.

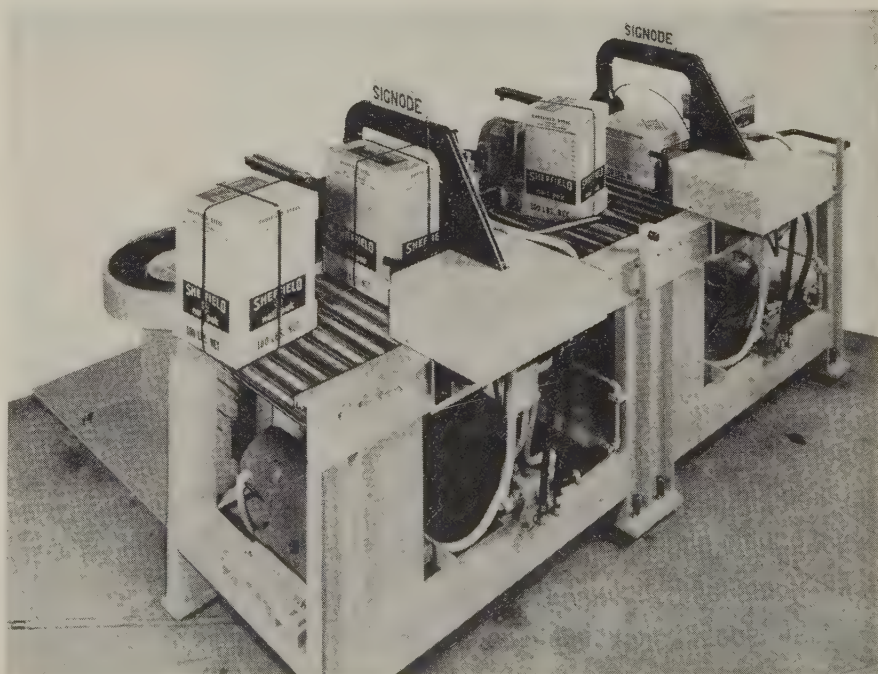
Strapper Handles Bundles of Any Size

THERE is no limitation on the shape, size, or firmness of bundles or packages that may be strapped with the Signode Model M20 Series power strapping machine.

Available in semiautomatic or automatic operations, the machines have straight mechanical design, with power supplied by standard electric motors. The service and maintenance complications of hydraulic or pneumatic power control systems are avoided.

An unlimited strap chute size and strap takeup accommodate all sizes of containers. Stepless adjustment of strap tension from 50 lb minimum to maximum tensile strength of the strap is possible. Maximum tension with a 3 horsepower motor is 600 lb.

Strap tension is applied smoothly without impact, regardless of the

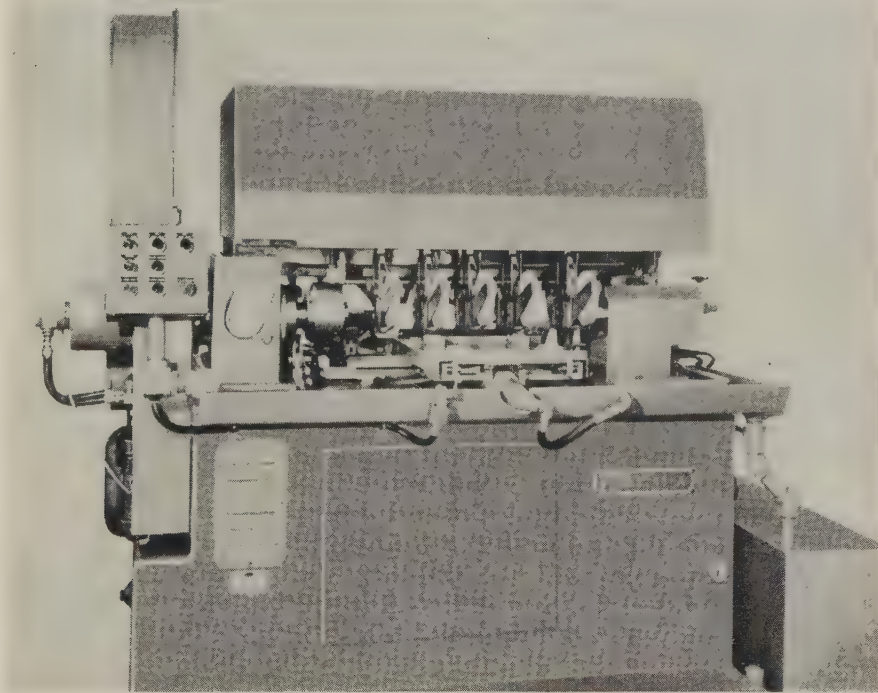


NEW PRODUCTS and equipment

stiffness or hardness of the bundle, permitting light gage strap to be applied to bundles with sharp corners.

The machine may be mounted in any position. Straps may be applied vertically or horizontally. Several machines may be ganged, so that multiple straps may be applied automatically and simultaneously to a single package.

For more information, write Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill.



Automatic Machine Burnishes Shafts

LAPPING or roll burnishing of bearing surfaces on shafts or camshafts can be done automatically on the Footburt-Schraner Model SFA machine. It will handle shafts up to 36 in. long with a maximum outside diameter of 12 in.

In production, the Model SFA can finish all bearing diameters on shafts at up to 250 pieces per hour (80 per cent efficiency). On camshafts, typical production for lapping cam lobes and bearings is up to 80 pieces an hour at 80 per cent efficiency. Roll burnishing of bearing diameters on shafts or camshafts is done at rates

Tool Drills, Finishes

SIMULTANEOUS drilling and finishing holes to size in one pass is an advantage provided by a new Clark tool which combines a replaceable spade drill with an adjustable reaming cutter.

The tool is especially designed for use on thick plate for rapid production of large diameter holes to close tolerances and with excellent finish. The adjustable cutter is of the floating finishing type, the blades expanding and locking to desired dimension. They are mounted in the bar with a cam-lock design which



permits a lateral float to the cutter. This enables the cutter to center itself to the hole, insuring extremely smooth, chatterfree finishing.

The spade drill is furnished in M-3 high speed steel for maximum life in tough, hard to machine steels. The floating finishing cutters are available either in M-3 high speed steel, or carbide tipped.

For more information, write Robert H. Clark Co., 9330 Santa Monica Blvd., Beverly Hills, Calif.

Punch Press Features Rapid Change Tooling

FAST hole punching in angles, channels, extrusions, and sheets is possible with the Model 1012 Uni punch press. Equipped with precision gaging and tooling, the press provides rapid interchangeability of punches and dies for various hole diameters.

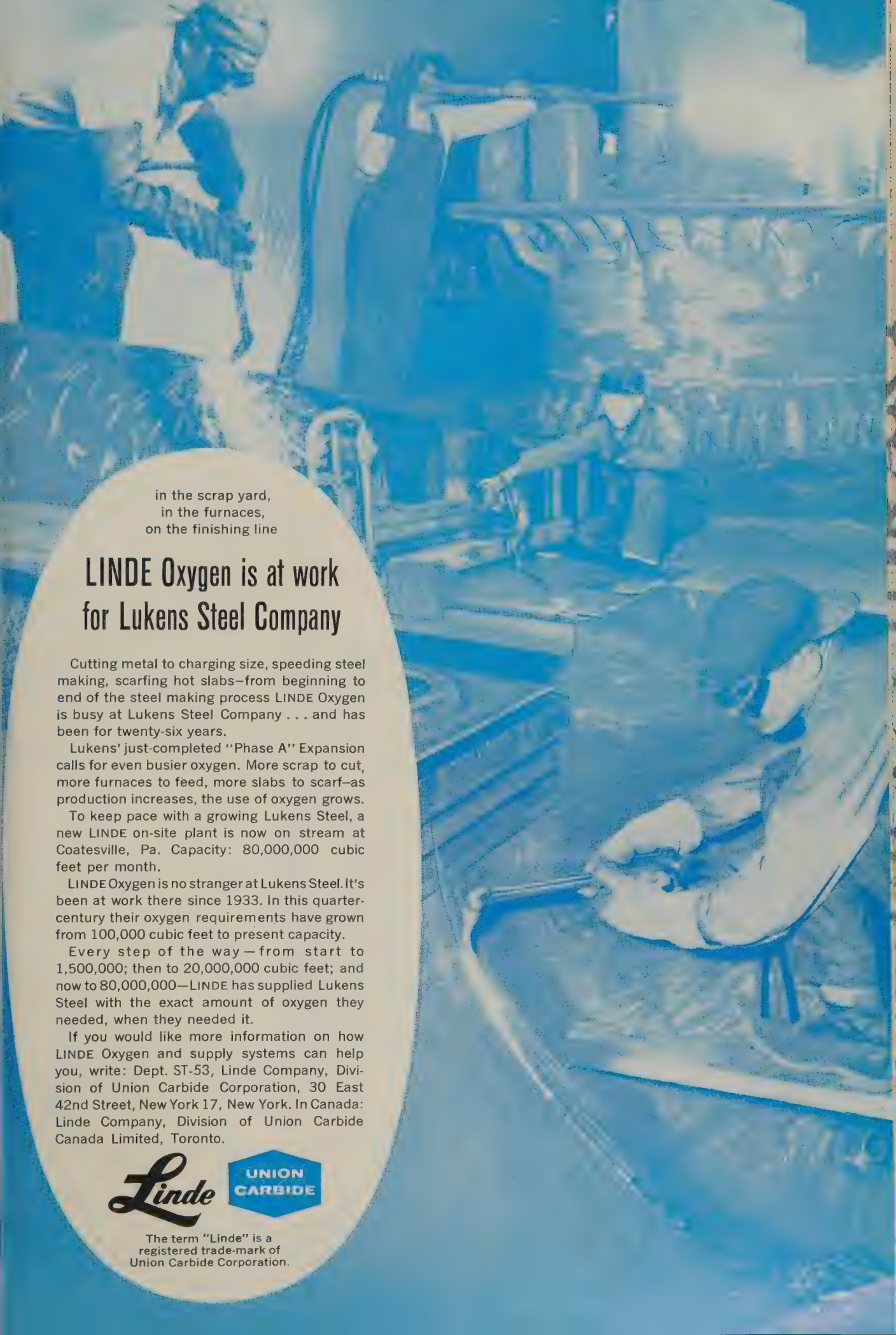
In addition to punching round and shaped holes, and notching corners and edges, the press may be used for punching extruded and countersunk holes, small louvers and lanced holes. Small die sets may be installed for making stamps

up to 150 pieces an hour.

The machine uses rolls of coated abrasive cloth as the finishing medium. A single roll of lapping cloth will usually finish 1000 to 1500 pieces when used on bearings, or twice as many pieces if used on cam lobes. Fresh cloth is fed automatically into the lapping heads as they move away from a finished part. A 5 to 7 microinch rms finish is obtained on parts which have been finish ground or precision turned to at least a 40 microinch rms finish.

For more information, write Footburt Co., Cleveland 8, Ohio.





in the scrap yard,
in the furnaces,
on the finishing line

LINDE Oxygen is at work for Lukens Steel Company

Cutting metal to charging size, speeding steel making, scarfing hot slabs—from beginning to end of the steel making process LINDE Oxygen is busy at Lukens Steel Company . . . and has been for twenty-six years.

Lukens' just-completed "Phase A" Expansion calls for even busier oxygen. More scrap to cut, more furnaces to feed, more slabs to scarf—as production increases, the use of oxygen grows.

To keep pace with a growing Lukens Steel, a new LINDE on-site plant is now on stream at Coatesville, Pa. Capacity: 80,000,000 cubic feet per month.

LINDE Oxygen is no stranger at Lukens Steel. It's been at work there since 1933. In this quarter-century their oxygen requirements have grown from 100,000 cubic feet to present capacity.

Every step of the way—from start to 1,500,000; then to 20,000,000 cubic feet; and now to 80,000,000—LINDE has supplied Lukens Steel with the exact amount of oxygen they needed, when they needed it.

If you would like more information on how LINDE Oxygen and supply systems can help you, write: Dept. ST-53, Linde Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York. In Canada: Linde Company, Division of Union Carbide Canada Limited, Toronto.

Linde



The term "Linde" is a
registered trade-mark of
Union Carbide Corporation.

NEW PRODUCTS and equipment

ings. Threaded nut inserts also may be pressed into sheets or parts. Heeled punches and dies are available for hogging out larger diameter holes and shapes than the maximum 2 in. diameter holes provided with standard hole punching units.

The all-welded punch operates at 10 tons capacity from 65 to 75 psi air line pressure.

Built-in scales insure accurate locations of holes and notches in the work.

For more information, write Punch Products Corp., 3800 Highland Ave., Niagara Falls, N. Y.

Glass Reflects Heat

PERSONNEL working in areas of intense heat can be protected by a plate glass heat shield which reflects 65 per cent of long wave infrared rays.

The window of the tempered

Pyrex glass is covered with a thin, transparent metallic film. The heat bounces off the coating which is permanently bonded to the glass. The glass itself does not become hot.

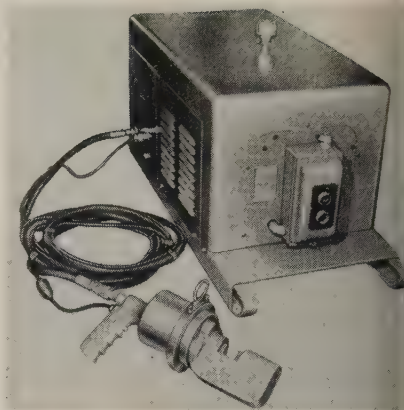
The low expansion glass has excellent thermal shock resistance and high mechanical strength. The reflective film is nonclouding. Like the glass, the coating resists abrasion and chemical attack.

For more information, write Corning Glass Works, Corning, N. Y.

Hydraulic Cutter Speeds Cutting of Rods and Bars

QUICK, safe, and efficient cutting of ferrous and nonferrous rods or bars up to 1 $\frac{3}{8}$ in. in diameter is possible with the Porter hydraulic cutter.

It consists of a cutter head and a portable, heavy duty power pump. The cutter head has a pistol grip



and can be operated with one hand. Power is applied through finger pressure on a control button.

For further ease in cutting, cutter heads may be suspended from self-retracting spring balancers so that the tool virtually floats over a large work area, relieving the operator of strain and speeding cutting operations.

For more information, write H. K. Porter Inc., Somerville 43, Mass.

Flooring Resists Chemicals

SUPERIOR resistance to chemical attack and mechanical abuse are claimed for Emeri-Epoxy, a fast setting flooring material. It is recommended for topping or resurfacing concrete, wood, tile, stone, brick and metal flooring.

The material combines a specially graded emery and an epoxy resin binder. It is supplied as a package containing two components, the dry mix of emery aggregate and epoxy resins, and a liquid catalyst.

Complete curing of the material results in 8 to 12 hours at room temperature.

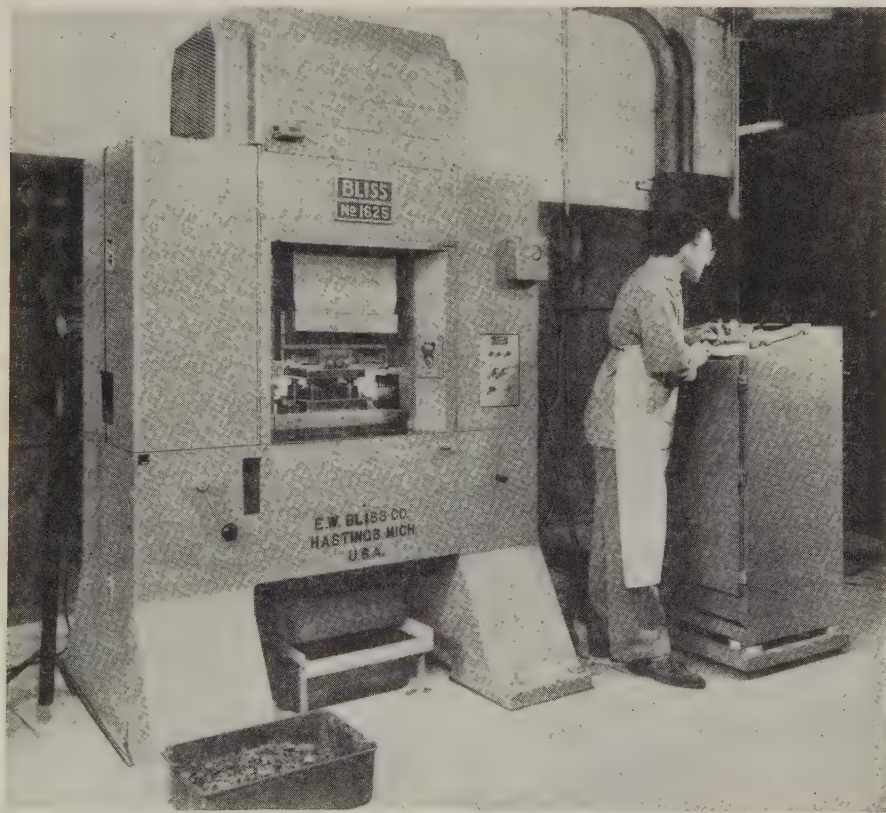
For more information, write Emeri-Epoxy, Walter Maguire Co. Inc., 60 E. 42nd St., New York 17, N. Y.

Air Cylinders Make Movement Automatic

HOLDING, positioning, work moving, or fatiguing motions can be made automatic with a line of square-end, double acting air cylinders.

Conforming to JIC standards, the cylinders are designed for air pressures up to 250 psi or hydraulic pressures up to 750 psi.

Five mountings are available—



THIS 25-TON BLISS PRESS has a proven production line capacity of 1000 strokes a minute. For stamping retaining rings and other fastening devices, the machine has several special design features which permit the extremely high speed. One is a counterbalancing system which works in opposition to the force frequencies set up by the slide and, in effect, nullifies them, minimizing vibration. A light duty, single roll feeds coil strip through the press. For more information, write E. W. Bliss Co., 1375 Raff Rd. S.W., Canton 10, Ohio



Jessop Steel Acquires Steel Warehousing Corp.

Rackley Board Chairman
Of This New Subsidiary

Jessop Steel Co. of Washington, Pa., a leading producer of specialty steels, has acquired Steel Warehousing Corp. of Chicago, a large Midwestern warehousing operation.

Frank B. Rackley, president of Jessop, will become chairman of the board of the subsidiary firm. A. J. Kueber, president of Steel Warehousing, said his company will be operated as a wholly owned subsidiary of Jessop and that no change in personnel is contemplated.

"In joining with Jessop, we now have available the necessary capital to get under way immediately with an expansion program to better serve our customers in Chicago and the Midwest," Mr. Kueber said.

"Jessop already has agreed to spend two-million dollars to increase our warehouse storage and expand our Broadview installation."

Steel Warehousing has facilities in Chicago and Broadview, Ill. It warehouses stainless and carbon sheets and plates and a wide range of structural shapes and specialty steels.

Jessop buys Steel Warehousing Corporation ... another reason for your confidence!

When you specify Jessop specialty steels, you've got good reasons for your decision. For example . . .

With Jessop, you're dealing with success. Although it's only two years since the acquisition of Green River Steel, Jessop now adds Steel Warehousing of Chicago. Already a two million dollar expansion of warehouse facilities is underway.

Its fast growth didn't just happen. It results from the Jessop policy of producing the highest quality specialty steels and keeping delivery promises!

So, you have good reasons to be confident when you specify Jessop.

VMA 6721

JESSOP
STEEL COMPANY
Washington, Pennsylvania

Subsidiary Companies:

Green River Steel Corporation, Owensboro, Kentucky
Jessop Steel of Canada, Ltd., Wallaceburg, Ontario

Jessop Steel International Corporation, New York City
Steel Warehousing Corporation, Chicago and Broadview, Ill.

Stainless, alloy, tool, cast-to-shape, and forging steels, precision ground flat stock, and other specialty steels.

NEW PRODUCTS and equipment

bolt, flush, leg, base, or side flush. The square-end design and interchangeable mounting plates permit mounting the cylinders in either parallel or 90 degree position relative to ports.

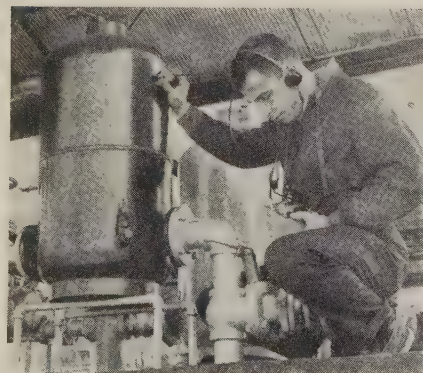
Other features include cartridge-type bronze bearing with self-adjusting U-cup piston rod seal; ground, hard chrome plated piston rods with minimum yield strength of 125,000 psi; all-machined cylinder ends and mounting plates; and high tensile strength tierods with 87,000 to 107,000 psi yield.

For more information, write A. Schrader's Son Div., Scovill Mfg. Co., 470 Vanderbilt Ave., Brooklyn, N. Y.

Instrument Measures Thickness Ultrasonically

FIELD inspection of structures where corrosion is suspected can be made easily with the Audigage Model 6 ultrasonic thickness tester. The self-contained nondestructive tester will measure most metals, glass, ceramics, and plastics from one side.

The unit weighs less than 5 lb, including batteries, probe, harness, cable, and earphones.



The instrument is of the direct reading type. By setting a selector switch to one of three positions, the thickness of steel, aluminum, or copper is determined automatically, without conversion charts or separate calculations. A fourth position is provided to permit calibration for other materials.

For more information, write Branson Instruments Inc., 40 Brown House Rd., Stamford, Conn.

NEW Literature

Write directly to the company for a copy

Punch and Die Catalog

A 50-page catalog and stock list (No. 60) shows a complete range of round, square, and oblong punches; dies and rivet sets. Geo. F. Marchant Co., 1420 S. Rockwell St., Chicago, Ill.

Polyester Resins Data

Three brochures on polyester resins reinforced with glass fiber describe several new fast curing resins for hand lay-up work and premix compounds, as well as a new chemical resistant resin. Finishes Div., Interchemical Corp., P. O. Box 659, Newark 1, N. J.

Abrasion Resistant Alloy

The four new hardness ranges and other properties of Jallo, a heat-treated, abrasion-resistant alloy steel, are described in a pamphlet. Public Relations & Advertising Dept., Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.

Martensitic Stainless Strip

A booklet explains why martensitic stainless steels have made inroads into many applications previously restricted to straight high carbon strip steels. Uddeholm Co. of America, 155 E. 44th St., New York 17, N. Y.

Inventory Aid

"Steel Inventory Check Sheet" helps steel users analyze their inventory practices. Hanover Div., Solar Steel Corp., 651 Lehigh Ave., Union, N. J.

Foil Gage Catalog

A 6-page bulletin, No. 4320, discusses etched foil gages and improved engineering features which have aided in the study of stress analysis problems. Electronics & Instrumentation Div., Baldwin-Lima-Hamilton Corp., 42 Fourth Ave., Waltham 54, Mass.

X and Gamma Rays

"Are You in This Profit Picture?" considers the advantages and disadvantages of inspection by x-radiation and gamma radiation and answers questions most frequently asked about each. Picker X-Ray Corp., 25 S. Broadway, White Plains, N. Y.

Aluminum Designation System

This bulletin explains the four-digit and temper designation system, both old and new, for aluminum alloys. Ziegler Steel Service Corp., 7022 Bandini Blvd., Los Angeles 22, Calif.

ABCs of Rust Prevention

A 20-page booklet presents basic information on rust, its causes, and application of preventives. Rust-Lick Inc., 755 Boylston St., Boston 16, Mass.

Grinding Gage Catalog

A 16-page catalog covers the complete line of Arnold continuous grinding gages. Federal Products Corp., 1144 Eddy St., Providence 1, R. I.

Carbon Steel Chart

A carbon steel specification chart (Sec. E, No. 1) shows the chemical analysis requirements for 60 most frequently used military and federal specifications. It also lists specified forms (sheets, bars, etc.) and nearest corresponding SAE, AISI, and AMS type numbers. Peter A. Frasse & Co. Inc., 17 Grand St., New York 13, N. Y.

Centralized Lubrication Data

"A Report to Management," a 16-page brochure, discusses application of modern centralized lubrication to reduce industrial operating costs and improve production. Industrial Div., Lincoln Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo.

Proper Grouting Practices

Bulletin Eld, 16 pages, describes Embecco nonshrink grout, and outlines methods of grouting different types of equipment, mixing and placing of grout in cold and hot weather. Master Builders Co., Cleveland 3, Ohio.



NEW BOOKS

Materials for Rockets and Missiles, Robert G. Frank and William F. Zimmerman, Macmillan Co., 60 Fifth Ave., New York 11, N. Y. 124 pages, \$4.50

This volume brings together engineering data on the lightweight, high temperature materials which are available for rockets and missiles, and previews materials which are expected to become available during the next few years. Materials are compared according to their chemistries and selected physical properties. The recommended material for each application is cited. New fabrication processes, including high temperature brazing, chipless production, and unconventional machining techniques are also covered.

The Physical Chemistry of Steelmaking, John Wiley & Sons Inc., 440 Fourth Ave., New York 16, N. Y. 257 pages, \$15

This volume contains 43 papers presented at the Conference on the Physical Chemistry of Iron and Steelmaking held at Massachusetts Institute of Technology. It is divided into sections covering: 1. Liquid metals and properties of solutes in liquid iron and steel. 2. Equilibria of reactions in liquid iron and steel. 3. The behavior of metal oxides and of components of iron and steelmaking slags. 4. Slag-metal equilibria in blast furnace and steelmaking furnace systems. 5. Kinetics and slag-metal reactions. 6. Reaction rates in iron and steelmaking processes. 7. Application of fundamental data to process development and metallurgical problems in the steel industry. 8. Solidification of castings and ingots. 9. Research planning.

Market Outlook

May 18, 1959

Second Quarter Will Be Biggest in History

RECORD BREAKING steel shipments in May will carry the industry to the biggest quarter in its history.

Steelmakers gained the first leg on their shipping trophy last month when they put out more than 8.3 million net tons of finished metal. (The best they'd done in any previous month was 8.25 million in March, 1956.) May shipments will set a record: 8.5 million to 8.75 million tons. June shipments will dip to 8.3 million, even though pressure from customers will be greater than ever because of the strike threat and because metalworkers are using the metal at high rates. Yet next month's shipments will decline for these reasons: 1. Steelmakers will have to start banking their furnaces toward the end of the month if a walkout seems inevitable. 2. Wildcat strikes may hamstring production. 3. The month has fewer shipping days than May. 4. Transportation problems will delay shipments.

In spite of the June letup, second quarter shipments will be more than 25 million net tons. The best previous quarter was the second in 1956, when 23.6 million were shipped. Because of this year's slow start (20.8 million tons shipped in the first three months), first half outturn probably won't match that of 1956 (46.9 million tons).

AUTOMAKERS BUY HEAVILY—Direct mill shipments to the automotive industry in March were the highest in history (1.76 million net tons vs. 1.68 million in March, 1955). Even so, the car manufacturers are behind schedule in their inventory buildups. Case in point: Ford Motor Co. has been asking steelmakers whether they can ship an extra 10,000 tons of sheets in June. Manufacturers of electrical machinery and equipment also received record shipments in March (250,394 net tons vs. 247,600 in June, 1956).

SLOW DELIVERIES FEARED—There has been no letup in pressure for the shipment of sheets prior to June 30. Although mills have no extra tonnage available for first half delivery, customers are still trying to supplement orders they placed months ago. Eastern steelmakers report surprisingly good third quarter entries for sheets. Elsewhere, bookings for July and August are concentrated mainly in galvanized products and sheared plates.

STRUCTURALS GAIN—Structural shapes are

coming into their own with the return of good construction weather. Wide flange beams are nearly sold out for the first half. Because of the strike threat, fabricators have taken in a lot of steel that won't be needed until the third quarter. If they had more definite ideas about their requirements, they'd continue buying.

SEAWAY TO BENEFIT TEXANS?—Many American steel producers are wringing their hands because the St. Lawrence Seaway may bring big tonnages of cheap European metal to their doorsteps, but mills in the Southwest aren't alarmed. They think the inland water route will take some of the pressure off Texas as a major dumping ground. The first two vessels carrying steel into Buffalo brought 8000 tons of scrapped rails, only 700 tons of finished steel. Estimates of imports in the next month or so range to 25,000 tons or more.

PRODUCTION AT PEAK—Last week, steelmakers operated their furnaces at 95 per cent of capacity and turned out 2,690,000 ingot tons—the largest production ever recorded.

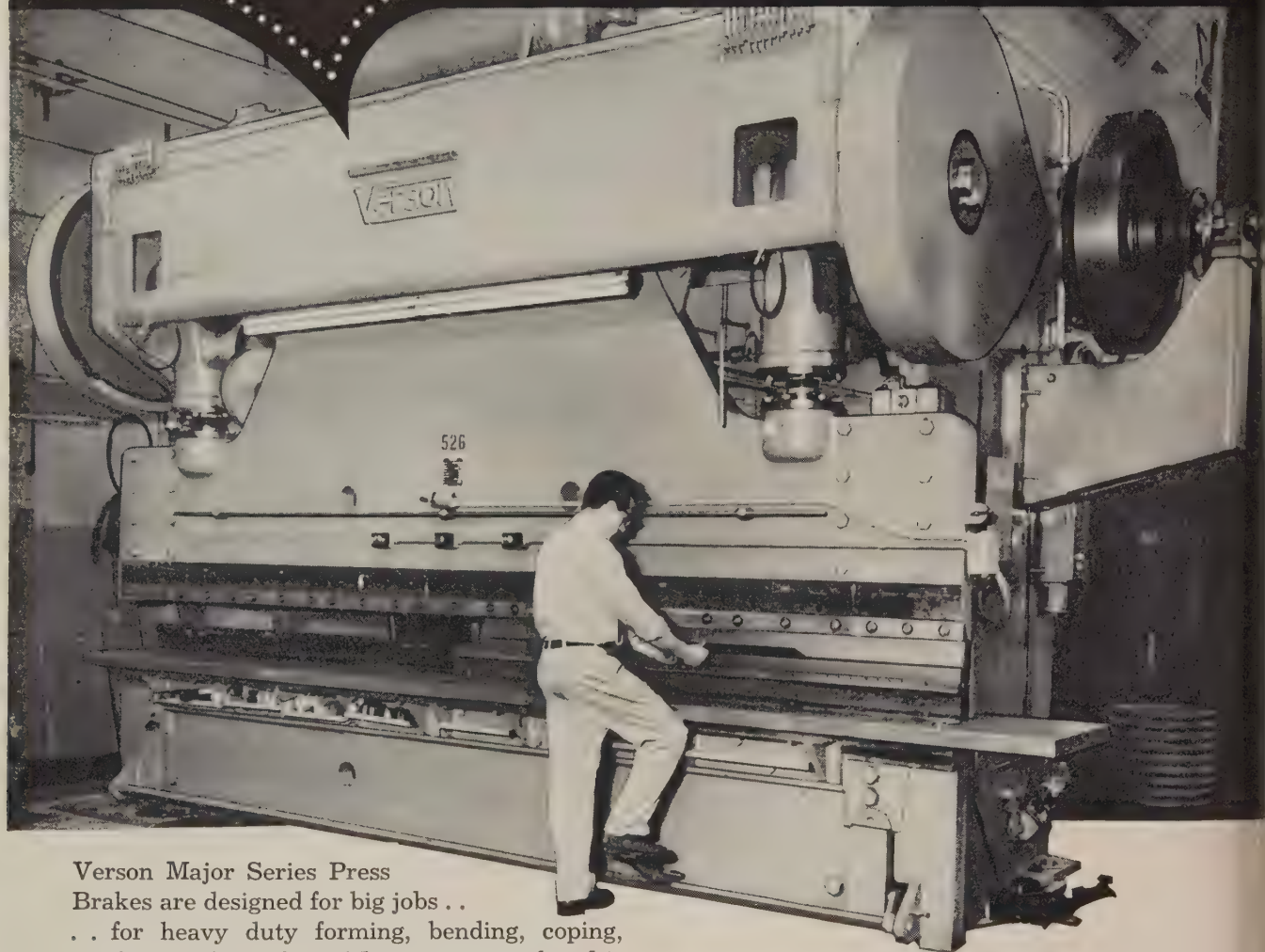
WHERE TO FIND MARKETS & PRICES

	News	Prices		News	Prices
Bars, Merchant	144	151	Nonferrous Met.	164	166
Reinforcing	148	152	Ores	...	157
Boiler Tubes	...	154	Pig Iron	...	147 156
Clad Steel	...	155	Piling	...	151
Coke	...	157	Plates	...	144 151
Coal Chemicals	...	157	Plating Material	...	167
Charts:			Prestressed		
Finished Steel	...	149	Strand	...	*
Ingot Rate	148	...	Price Indexes	...	149
Scrap Prices	...	161	Producers' Key	152	...
Comparisons	...	149	R.R. Materials	...	154
Contracts Placed	168	...	Refractories	...	157
Contracts Pend.	168	...	Scrap	...	161 162
Electrodes	...	157	Semifinished	...	151
Fasteners	...	154	Service Centers	168	156
Ferroalloys	...	158	Sheets	...	142 152
Fluorspar	...	157	Silicon Steel	...	153
Footnotes	...	154	Stainless Steel	...	155
Imported Steel	148	157	Strip	...	142 153
Ingot Rates	148	...	Structurals	...	168 151
Metal Powder	...	157	Tin Mill Prod.	...	153
			Tool Steel	...	155
			Tubular Goods	145	155
			Wire	...	143 153

*Current prices were published in the May 11 issue and will appear in subsequent issues.

for **BIG JOBS**...for Precision Performance...

Choose Verson Major Series Press Brakes



Verson Major Series Press Brakes are designed for big jobs . . . for heavy duty forming, bending, coping, notching and punching. They represent the ultimate in press design for strength, rigidity, endurance, accuracy and power.

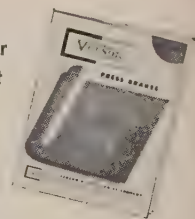
Compare the design features of Verson Major Series Press Brakes against any other make . . . you'll see why these machines have earned such wide acceptance among manufacturers who demand the utmost in performance, precision and production.

Verson also offers four other basic lines of mechanical press brakes . . . smaller in size. A complete line of hydraulically operated press brakes is also available.

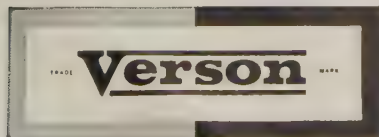
Whatever your requirements, there is a Verson Brake to fit your particular job. Let Verson application engineers help you in making your selection. Call or write, today.

Send for CATALOG B-55

From 15 tons up, there is a Verson Power Press Brake to meet every requirement for forming, bending, coping, notching or punching. Send for your copy of this 28-page informative catalog. There is no obligation, of course.



A Verson Press for every job from 60 tons up.



ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

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MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRACKS • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • Verson-WHEELON HYDRAULIC PRESSES

How Ryerson's New Steel Warehouse Pricing Structure Works in Pittsburgh

EXAMPLE A

SINGLE ITEMS . . . each item bought by a different customer—or—each item bought separately by the same customer on different days.

	Price Per 100 Pounds	
	New Method	Old Method
2000 lb standard beams 3 x 5.7	\$9.79	\$10.55
1000 lb angles 2 x 2 x 1/4	9.61	11.29
500 lb bars 1 in. rd. HR M-1020	10.47	13.74
5000 lb plates 1/4 x 60 in. HR sheared	8.50	9.69
100 lb angles 1/2 x 1/2 x 1/8	18.02	19.24
12,000 lb sheets 12 x 42 x 120 HR	7.77	8.70

In all these cases the single item price is lower and the total invoice savings will vary from about \$1 net on the 100 lb item to about \$110 net on the 12,000 lb item.

EXAMPLE B

TOTAL ORDER OF 20,600 lb (all items bought at one time by one customer).

	Price Per 100 Pounds	
	New Method	Old Method
2000 lb standard beams 3 x 5.7	\$9.49	\$9.55
1000 lb channels 3/4 x 3/8 x 1/8	12.47	11.04
480 lb bars 3 in. rd. HR C-1018	11.38	9.44
5000 lb plates 1/4 x 60 in. 40/50 carbon	10.67	10.99
120 lb bars 3/8 x 2 flat HR 40/50 carbon	15.30	9.84
12,000 lb sheets 12 x 42 x 120 HR	7.67	8.45
Total Order—20,600 lb.		

On some items the price per 100 pounds goes up and on some the price goes down, but the total invoice cost is about \$80 less on the new price basis.

EXAMPLE C

TOTAL ORDER OF 1370 lb (consisting of seven relatively small items).

	Price Per 100 Pounds	
	New Method	Old Method
70 lb bars 3/8 rd. HR M-1020	\$18.55	\$11.89
120 lb bars 5/8 rd. HR C-1045	16.06	12.09
500 lb angles 1 x 1 x 3/16	11.29	11.69
150 lb sheets 16 x 30 x 96 HR	14.53	11.05
30 lb plates 3/8 x 11 in. x 14 1/2 in. HR	18.11	12.19
300 lb channels 1 x 3/8 x 1/8	17.37	12.84
200 lb bars 1/2 x 2 flat HR	14.70	11.24
Total Order—1370 lb.		

This type of order is the most expensive to handle. Even with the savings on the 500 lb item 1 x 1 x 3/16 angle, shown in the example, the total invoice cost on the new price basis will be about \$33 more than on the old.

HERE'S the new warehouse price structure on hot-rolled carbon steels, cold-rolled and galvanized sheets put into effect in the Pittsburgh area May 1 by Joseph T. Ryerson & Son Inc., Chicago.

It's based on combined application of item extras and order quantity discounts. "Net prices per size, based on turnover rates of the various product groups," replaces the familiar "base price plus extras" method long in vogue in the steel distributing industry.

• **Cost Study Findings**—Says Ryerson: "While we have always known that our order handling costs are lower on large orders than on small, we had thought of the total weight of all items combined as being the cost determining factor. But our cost studies have emphasized that handling costs vary according to the quantity per individual item. Those cost differences hold true regardless of the number of separate items on a single order, or of their combined total weight. In addition, faster turnover of the fast moving product groups enables us to offer them at lower prices."

• **How to Save**—Although there's still a price advantage to the steel buyer who groups several items into a single purchase to increase total order weight, the greater advantage will come through ordering larger quantities of individual items. Significant also is the fact that buyers of single items in the popular categories will now be charged less than before.

Item extras per 100 lb are:

10,000 lb and over	Base
5,000 to 9,999 lb	plus \$.10
2,000 to 4,999 lb	plus .35
1,000 to 1,999 lb	plus .85
400 to 999 lb	plus 2.00
100 to 399 lb	plus 6.00
Under 100 lb	plus 9.00

Order discounts per 100 lb are:

20,000 lb and over	less \$.75
10,000 lb to 19,999 lb	less .65
5,000 lb to 9,999 lb	less .55
2,000 lb to 4,999 lb	less .45
1,000 lb to 1,999 lb	less .35
400 lb to 999 lb	less .25
Under 400 lb	Base

Steel Shipments in March Were Close to the Record

Shipments of finished steel products during March totaled 8,117,688 net tons, reports the American Iron & Steel Institute. The tonnage is second only to the monthly record of more than 8.3 million set in March, 1956.

Direct mill shipments to the automotive industry set a record of 1,761,521 net tons in the month. The total was 267,000 above the Febru-

ary tonnage and compares with the old record of 1,679,200 tons set in March, 1955.

Makers of electrical machinery and equipment also received record shipments during March, the total of 250,394 tons being up 28 per cent from the February figure. The former monthly record of 247,600 tons was set in June, 1956.

Records were set in shipments of three major categories of sheet steel: Hot-rolled sheets, 927,506 net tons; cold-rolled sheets, 1,557,042 tons; galvanized sheets, 311,961 tons.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 152 & 153

BUYING PRESSURE for sheets is not so much to get new tonnage on mill books as it is to get shipments by the end of June on orders placed some time ago.

Indications are some makers' carryover into the third quarter will be as much as a month's production of the major grades. This adds to the pressure from consumers.

There is only moderate buying for the third quarter, but it's better than had been expected. Some of the larger consumers are not only placing orders for July delivery, but they are seeking tonnage for shipment over the entire quarter. This does not mean they are placing all of their requirements for the period, but it does reflect their confidence in continued expansion of consumer goods markets over the summer. Forward buying is more noticeable in galvanized sheets than in other grades of flat rolled.

• **Running Behind** — Although they're running seven to ten days behind schedule on shipments, Pittsburgh sheetmakers have done a good job of processing orders. In the face of unprecedented demands they've kept almost all their commitments. Truck shortages have caused some delays. Shippers can't get equipment as fast as they want it and it's feared conditions will worsen next month.

Ford Motor Co. is reported asking for an extra 10,000 tons of sheet for June delivery. Other consumers are also seeking additional tonnage. However, since there have been few cancellations, it looks like they'll have little chance of adding to their tonnage on mill books.

Longest carryover into third quarter will be hot and cold rolled sheets, galvanized sheets, and plates. Galvanized sheets are in tightest supply of the light flat-rolled items. Tonnage is still being allocated on the basis of historical buying patterns.

• **Inventories Fall Short**—In general, consumers are resigned to the fact their stocks won't come up to expectations. They have been chewing up steel faster than they had anticipated, and mill shipments are being delayed in some instances. But manufacturers of some consum-

WEBB PLATE FABRICATING MACHINERY

Steelworkers ALL STEEL CONSTRUCTION DELIVERY 10 DAYS

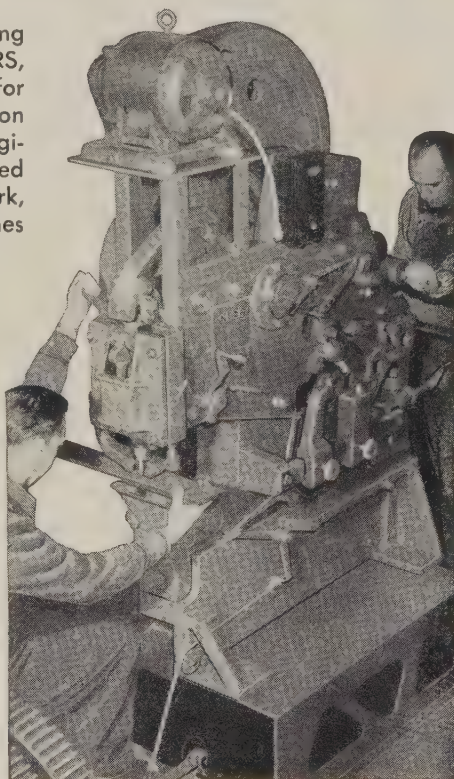
The Webb Corporation, in presenting the line of new WEBB STEELWORKERS, has designed versatile machines for either job-work or high production work. These units have been engineered to meet the particular need of shops having a variety of work, with a result that all-purpose machines are now available.

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2. Cuts angles and tees with straight or miter cut.
3. Cuts off round and square bars.
4. Shears plates and bars.
5. Coping or notching attachment.

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goods, notably electrical appliances, are reported to have rather large inventories of finished steel goods. It isn't likely they'll get caught short if there's a brief steel strike. When the pickup in appliances came this year, the industry considered its stocks too light and began bolstering them. It ordered steel generously but used up much of its intake as quickly as possible in turning out finished goods for inventory—easing the problem of finding storage space for steel. Narrow cold-strip mills are late in delivery promises in some instances, but they are holding closer shipment schedules than the sheet sellers. Most second quarter narrow strip tonnage will be shipped by June 30.

Contracts Placed—Strapping steel contracts awarded by the General Stores Supply Office, Navy, Philadelphia, include: 170 tons, Brainard Steel Div., Sharon Steel Corp., Warren, Ohio; 125 tons, Independent Metal Strap Co., Brooklyn, N. Y.; 110 tons, Steel & Wire Products Co., Baltimore. The Quartermaster Corps, Army, Columbus, Ohio, has placed 70,000 steel drums, gallon, with the Southline Metal Products Co., Houston, on its bid \$523,600.

Use of galvanized steel sheets in automobile manufacturing has increased by more than 700 per cent since 1954, reports the Committee on Galvanized Steel Sheet Research. Sixty-three lb were consumed in the average auto in 1958, 8.9 lb in 1954. Total galvanized sheet tonnage shipped to the auto builders rose from 24,400 in 1954 to 133,215 tons in 1958. Another increase is predicted for this year.

Wire . . .

Wire Prices, Pages 153 & 154

Wire consumers are placing more third quarter orders in New England, but in cases where supply will not be halted, shipment prior to September is not urgent. Exceptions are suppliers to the automotive industry, particularly of high carbon wire, and to some extent, to the stener makers who want cold heading grades. In most cases, consumers in these groups will fall short of their estimated inventory build-up; they are placing third

quarter orders with a view to establishing favorable positions in mill schedules after the strike, if there is one.

Manufacturers' grades are in top demand, with all signs pointing to a heavy flow of orders for the next 60 days. Usually, a wire production slump is experienced during the summer, largely because automotive needs taper off then. Likewise, the furniture trade is less active, and requirements for cooling and ventilating equipment decline.

Foreign competition continues to be a severe headache for domestic wiremakers, especially in the merchant products. It's estimated that 51 per cent of the nails purchased in the Pacific Coast area in the three months ended Mar. 31 were imported. Barbed wire imports accounted for 57 per cent of the coast market for that product.

For Naval shipyard, Portsmouth, N. H., a \$132,750 contract has been placed for 75 tons of bar welding wire with Air Reduction Sales Co.

STAINLESS COSTS LESS THAN ALUMINUM—



Do you know that the square-foot cost of stainless steel sheet for curtain wall panels is usually equal to or lower than aluminum when compared in thicknesses of equal indentation resistance? For example, Type 302 stainless steel, .022" thick is equal to .051" aluminum and costs only 62¢ per sq. ft., as compared to 67¢ per sq. ft. for 3003-H14 anodized aluminum.

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Please send me full information on comparative costs of stainless steel vs. aluminum for curtain wall panels.

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Position _____
Company _____
Street _____
City _____ Zone _____ State _____

Steel Bars . . .

Bar Prices, Page 151

Except for some stock sizes in cold drawn, bar sellers have virtually nothing to offer for delivery over the remainder of this quarter. Some say they will wind up with a carryover because they are already running a little behind on commitments. But they don't expect to be behind more than two weeks by the end of June. Others think they won't be behind even that much.

Demand is fairly diversified. Third quarter ordering is showing some improvement, with interest partly due to the desire of buyers to obtain a good position in mill schedules once the steel strike (if there is one) is over.

An additional contract for the Army's new M-14 rifle has increased demand for gun barrel stock in New England. Three firms have contracts totaling \$13 million, including Harrington & Richardson Inc., Worcester, Mass., 35,000 units, \$4-

116,250. Others are: Winchester New Haven, Conn., and Saco Lowell Shops Inc., Biddeford, Maine (machine guns). The contracts increase bar requirements for small arms to a postwar high. Machine tools and new tooling will cost several millions.

Frankford Arsenal, Philadelphia closes May 12 on 185 tons, steel forgings (35,325); about one-half set aside for labor surplus are shops.

Plates . . .

Plate Prices, Page 151

Demand for plates would be brisk even if customers weren't hedging against a possible strike this summer.

At Pittsburgh, a leading producer of sheared plates is a month behind on shipments from its 96 in. mill, but this hasn't triggered any cancellations. Users want everything they've ordered even if they have to wait until after a strike to get it.

Carryovers on other sheared plate mills are expected to be no larger than normal. If a strike's averted near capacity operations are assured through July.

While some universal plates can still be worked into second quarter schedules, the mills are generally sold out for the period. Sheared plates and strip have been out of the question for second quarter for some time. Actually, the situation in universal plates is about as tight except for a few "holes" which will be filled without too much trouble.

Third quarter demand is increasing, but in terms of orders on book is nowhere near current levels. Producers are confident they'll book enough tonnage to keep their mills fully occupied. July and part of August capacity in sheared and strip plate is spoken for in the case of most mills, taking particularly into account a likely carryover of at least two weeks from the second quarter.

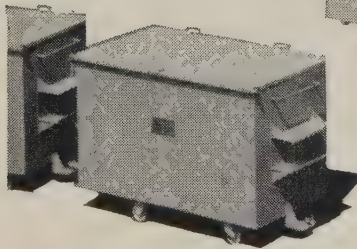
One mill whose labor contract doesn't expire for a month after the July 1 deadline for most producers has been faced with especially heavy plate inquiry.

Except for grade Hy-80, high tensile naval shipyard specification shipbuilding demand has declined. Lukens Steel Co., Coatesville, Pa.

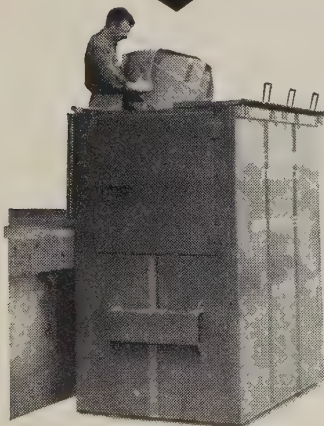
cut disposal costs by two-thirds . . .

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oked one contract for Hy-80
ade, 6230 tons, at \$3,910,121, and
oricated head and flange work,
me grade, at \$429,807.

Tubular Goods . . .

Tubular Goods Prices, Page 155

All tubular products except stand-
d seamless and drill pipe are sold
t for the first half. Since oil
ducers can't get any more tub-
g from the mills before July,
ey're cleaning out the downriver
ocks.

Fastest moving items are 2 $\frac{3}{8}$ in.
d 2 $\frac{7}{8}$ in. OD tubes; J-55 tubes
e in tightest supply.

Demand for drill pipe remains
uggish because consumers have
g inventories. The mills are keep-
g deliveries on schedule, and so
r they've had no trouble getting
rges. Trafficmen think it'll be
xt month before difficulties are
countered in shipping.

Fully committed for the first half
trunk line pipe, producers have
bstantial bookings for the third
d fourth quarters.

Demand for standard pipe has
cked up with the return of good
nstruction weather. One producer
oked 87 per cent of its butt weld
capacity in April and expects to
n nearly full this month.

The tubemakers are booking siz-
le tonnages of standard pipe for
ly and August delivery, apparent-
because consumers fear a strike
d want to be first in line when
oduction is resumed. !

Oilfield casing and tubing sup-
iers have favorable news from the
l industry as Hughes Tool Co.'s
rvey shows that for the fifth
raight week U. S. drilling opera-
ns set a new 1959 high. For the
ek ended May 4, Hughes counted
34 rotary rigs in operation, a gain
26 over the previous week, and
321 from a year ago.

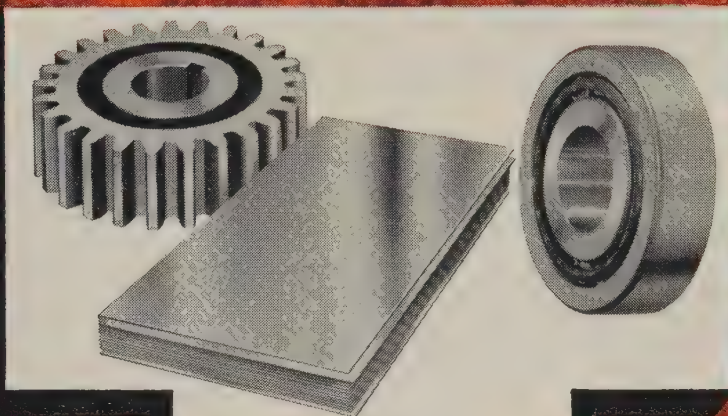
Alaska Public Works has awarded
\$480,657 contract for water sys-
m improvements at Fairbanks,
aska, to the Morrison-Knudsen
O.

Phoenix Steel Tube Div., Phoenix
eel Corp., Phoenixville, Pa., is
ow manufacturing seamless low-
rome analyses pipe and tubing in
ameters from 8.625 in. to 16 in.,
d wall thicknesses from $\frac{3}{8}$ in.
3 in.

ay 18, 1959

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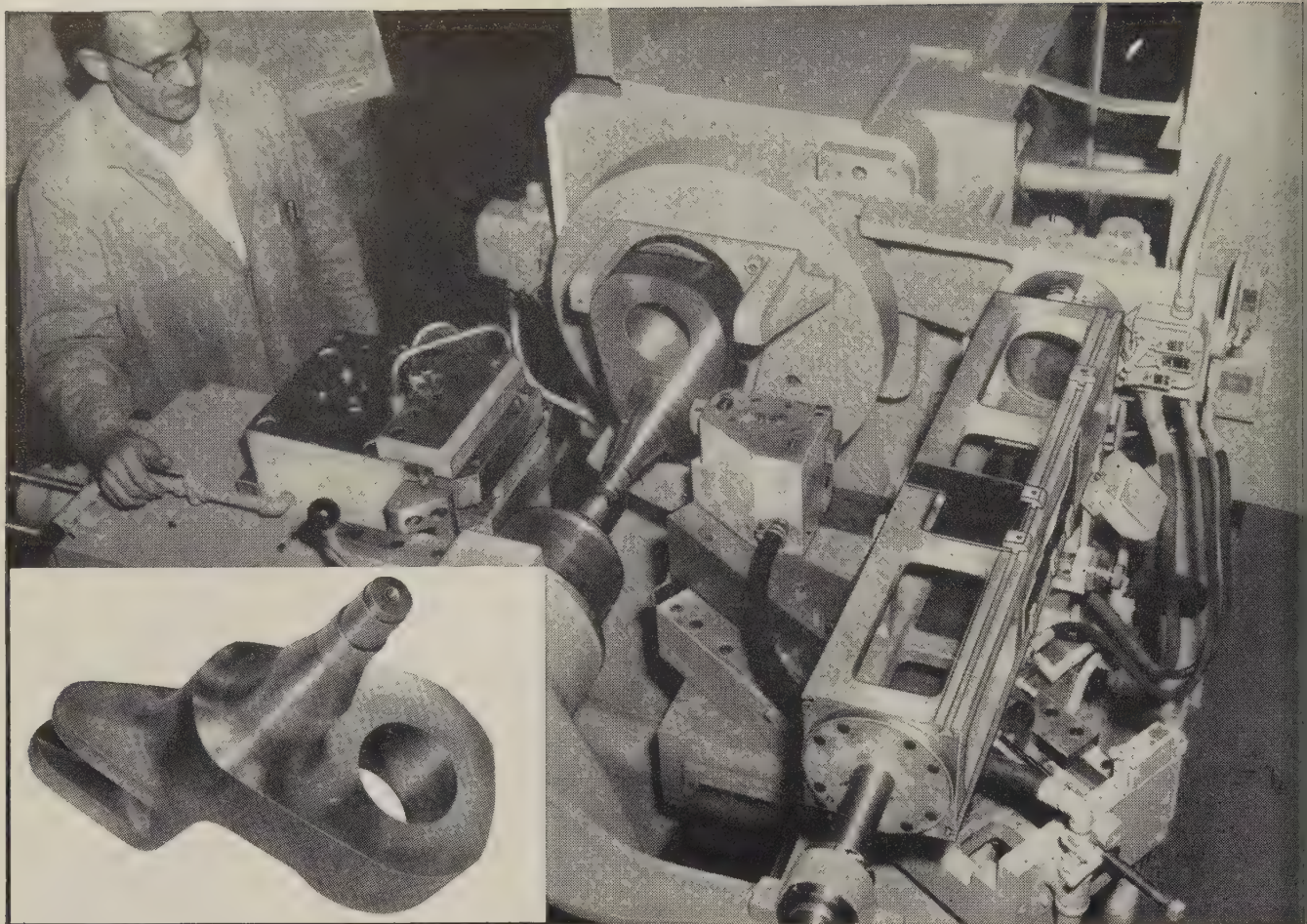
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Chart." Specifies applications
covering the entire field.

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RUST PREVENTIVES

VALVOLINE OIL COMPANY, Freedom, Pennsylvania
Division of Ashland Oil & Refining Company



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Handles tough, interrupted cut and contour machining easily
with Gisholt No. 24 Automatic with JETracer

Here's how this producer is holding floor-to-floor time on military tank idler arm forgings—18" long with 5½" major radius—to just 21.1 minutes.

The job is done with the powerful Gisholt No. 24 Automatic Production Lathe, using a JETracer on the rear independent slide, plus a 2-speed motor for correct machining speeds when facing and turning.

With the part held between centers, a special face plate fixture locates the work and drives against the large O.D. radius. All cuts are made separately; each slide performs a rough and finish pass. The front tool slide faces at 60 r.p.m. and .015" feed (306 f.p.m.) and has automatic tool relief. Two tools divide the length of cut to shorten machining time. A special step-over cam arrangement repositions the front carriage and its tools for the finish pass.

The JETracer uses a 4-position indexing cam roll (permitting up to 4 automatic passes if needed), and controls the rear slide which turns all diameters on the idler arm at 180 r.p.m. and .015" feed (259 f.p.m.).

Whatever your production picture on large parts—long steady runs or small repeat lots—you'll find proven ways to cut costs with the Gisholt MASTERLINE No. 24 Automatic Production Lathe. One operator handles 2 or more of these powerful machines, or does other jobs during machining time, because all machine functions are automatically controlled. Setups and change-overs are fast and simple.

For complete details on the No. 24 and other Gisholt machines, call your Gisholt Representative today. He has the facts, and his wide experience may point the way to more profitable production in your plant.



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Steel Production Is Best

Record Reported for April

Steel production last month was a record breaking for April, totaling 272,000 net tons, reports the American Iron & Steel Institute. Production exceeded 11 million tons the second month in a row. In March the furnaces poured 11,567,500 tons, a record for any month. Prior to March, the only 11-million-ton months were October, 1956, and January, 1957.

In April last year, output amounted to only 5,532,991 tons.

Production in the first four months this year was 41,760,068 tons, an increase of 71.7 per cent over the 24.3 million produced in the first four months a year ago. The record output for the first four months of any year was 42.4 million tons in 1956.

According to the institute's index of steelmaking, the April production was 163.7 in terms of the basic index of average output during 1947-50. This compared with 162.6 during March, and 80.4 in April, 1958.

The index figure for the first four months was 151.6 vs. 88.3 during the same period of last year.

Based on the Jan. 1, 1959 capacity of 147,633,670 net tons annually, the steelmaking facilities were utilized at an average of 92.2 per cent of capacity during April vs. 83 per cent in March. The figure for the first four months was 86.

Pig Iron . . .

Pig Iron Prices, Page 156

Merchant pig iron sellers say May will be their best month so far this year. Buying is leveling off at some points, but many consumers are still covering their requirements, though forward buying, despite the threat of a steel strike at the end of June, is not booming.

Shipments are holding close to the April level which represented a peak for the first four months. Some slackening had been expected, and further easing in June is anticipated, though some foundries may begin to show more interest in the strike hedge tonnage.

The call for foundry iron continues steady with foundries generally on a five-day week.

Steel Ingot Production—April, 1959

Period	OPEN HEARTH (Net tons)	BESSEMER (Net tons)	OXYGEN PROCESS (Net tons)	ELECTRIC (Net tons)	TOTAL (Net tons)	Per cent of capacity
1959						
January . . .	8,280,985	120,005	186,820	729,575	9,317,385	74.3
February . . .	8,541,031	128,515	176,970	756,422	9,602,938	74.3
*March . . .	10,206,474	184,892	236,595	929,784	11,567,745	84.8
*1st Qtr. . .	27,038,490	433,412	600,385	2,415,781	30,488,068	83.8
†April	9,881,000	196,000	237,000	958,000	11,272,000	92.9

Period	—OPEN HEARTH— Net tons	Per cent of capacity	—BESSEMER— Net tons	Per cent of capacity	—ELECTRIC— Net tons	Per cent of capacity	—TOTAL— Net tons	Per cent of capacity
1958								
January . .	6,085,124	58.6	121,338	35.5	547,440	44.8	6,753,912	58.5
February . .	5,252,112	56.0	81,597	28.4	448,614	40.6	5,782,323	53.6
March . . .	5,598,944	53.9	122,317	35.8	533,361	43.6	6,254,622	52.3
1st Qtr. . .	18,936,180	56.2	325,252	32.8	1,529,425	43.1	18,790,857	54.1
April	4,875,619	48.5	109,433	33.1	547,939	48.3	5,532,991	47.8
May	5,602,123	53.9	110,366	32.3	588,670	48.2	6,301,159	52.7
June	6,378,942	63.4	88,125	26.6	660,413	55.8	7,127,480	61.6
2nd Qtr. . .	16,856,684	55.3	307,924	30.7	1,797,022	50.1	18,961,630	54.0
1st 6 Mo. . .	33,792,864	55.7	633,176	31.7	3,326,447	46.6	37,752,487	54.1
July	5,712,587	55.0	114,218	33.4	615,600	50.4	6,442,405	53.9
August . . .	6,481,185	62.4	134,435	39.3	692,383	56.6	7,308,003	61.1
September . .	6,769,660	67.3	103,194	31.2	759,518	64.2	7,632,372	66.0
3rd Qtr. . .	18,963,432	61.5	351,847	34.7	2,067,501	57.0	21,382,780	60.3
9 Mo. . . .	52,756,296	57.7	985,023	32.7	5,393,948	50.1	59,135,267	56.2
October . . .	7,795,541	75.0	148,458	43.4	895,779	73.3	8,839,778	74.0
November . .	7,572,555	75.3	145,867	44.1	850,896	71.9	8,569,318	74.1
December . .	7,755,002	74.6	116,637	34.1	838,883	68.6	8,710,522	72.9
4th Qtr. . .	23,123,098	75.0	410,962	40.5	2,585,558	71.3	26,119,618	73.6
2nd 6 Mo. . .	42,086,530	68.3	762,809	37.6	4,653,059	64.1	47,502,398	67.0
Total	75,879,394	62.0	1,395,985	34.7	7,979,596	55.4	85,254,885	60.6

Note—The percentages are based on annual capacities as of Jan. 1, 1959: Open hearth, 126,528,380 net tons; bessemer, 3,577,000 net tons; basic oxygen process, 4,033,160 net tons; electric and crucible, 13,495,130 net tons. Total: 147,633,670 net tons. In 1958, the capacity tonnages were: Open hearth, 122,321,830 net tons; bessemer, 4,027,000 net tons; oxygen process, electric and crucible, 14,393,740 net tons. Total: 140,742,570 net tons.

*Revised. †Preliminary.

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Pittsburgh Steel Co. Is Dropping Merchant Wire Products Trade

PITTSBURGH STEEL CO. is quitting its oldest product line—merchant wire products. Consumers were informed (May 11) that no new orders for fence, chain link fabric, barbed wire, nails, and gates will be accepted. When orders on books are shipped, production of those products will cease—probably sometime in the third quarter.

Fence and wire were among the first products made by the company when it opened its Monessen, Pa., plant in 1902.

Merchant products have always required a high number of man-hours per ton of product produced. One type fence requires 36 to 38 manhours. The average for merchant products is about 30 man-hours per ton. With the company's employment costs climbing steadily, its profit margins on this line have vanished.

Monthly sales volume has been averaging around 2000 tons; sales have been way off during offseason winter months.

Four reasons are given for the company's action: 1. Advancing costs. 2. Falling volume. 3. Dim prospect for improved productivity per manhour of work. 4. Serious inroads of foreign competition in the American market. Because wages are considerably lower in Europe and Japan, producers of imported

merchant products can undersell American mills by a wide margin.

Aware of the impact the decision will have on its employees, the company is making every effort to offset the loss of work. Manhours required at the company's present level of operations equals the working time of 360 people. As late as 1955, 900 employees were required.

The company recently expanded facilities for making highway welded wire reinforcing material, and its product development unit is working on several programs to bring new products into the Monessen Works finishing department.

• **Capital Improvements** — Several programs are being studied for the Monessen Works. Among them is a project to revamp the rod mills to permit production for direct sale.

Boltmaker Is Quitting

Buffalo Bolt Co., a division of Buffalo Eclipse Corp., North Tonawanda, N. Y., will discontinue operations June 30, C. Neal Turner, president of the division, announced. More than 800 employees will be affected. Also, the division is discontinuing boltmaking operations at its plant in Princeton, Ill., where about 25 are employed.

Mr. Turner listed several reasons for closing: Diminishing market in

the bolt industry; problems arising from intense competition, and the prohibitive cost of rehabilitating, maintaining, and converting the plant to permit continuance in the competitive market.

Steel Imports, Via Seaway Substantial at Buffalo

Substantial tonnages of European steel are coming into Great Lakes ports now that the St. Lawrence Seaway is opened to large, ocean-going vessels.

About 3700 tons, including 700 tons of finished products, have been laid down at Buffalo. The Swedish freighter, *Sunanbris*, second foreign vessel to arrive at Buffalo since the opening of the seaway, carried 3000 tons of used rails from Scotland. The material will be rerolled into fence posts, signposts, and reinforcing bars.

The finished steel came from Belgium and the Saar Valley. It was consigned to several Buffalo area plants and was imported through Associated Metals & Transport Co. of New York.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 152

Some strike hedge buying of reinforcing bars continues. However, the bulk of demand is for jobs in hand. Production of reinforcing bars and wire mesh is close to peak, and expectations are demand will hold at a high level through out the summer.

DISTRICT INGOT RATES (Percentage of Capacity Engaged)

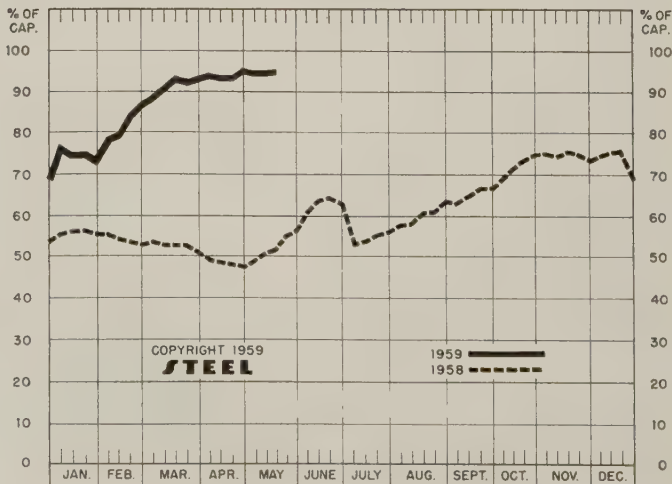
	Week Ended May 17	Change	Same Week 1958	1957
Pittsburgh	96.5	+ 5*	53.5	90
Chicago	93	0*	55.5	85
Eastern	97	0	48.5	95
Youngstown	96	+ 2	45	81
Wheeling	93	+ 1	71	85.5
Cleveland	99.5	+ 4*	26	83
Buffalo	105	0	39	85.5
Birmingham	92	+ 1.5	66.5	93.5
Cincinnati	95	- 1.5*	52.5	71.5
St. Louis	101	- 4.5	77	85.5
Detroit	97	- 2*	37.5	82.5
Western	96.5	+ 2.0	67	99
National Rate	95	+ 0.5	51.5	86.5

INGOT PRODUCTION†

	Week Ended May 17	Week Ago	Month Ago	Year Ago
INDEX	165.9	162.1	165.4	87.9
(1947-49=100)				
NET TONS	2,665	2,804	2,657	1,412
(In thousands)				

*Change from preceding week's revised rate.
†Estimated. ‡American Iron & Steel Institute.
Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

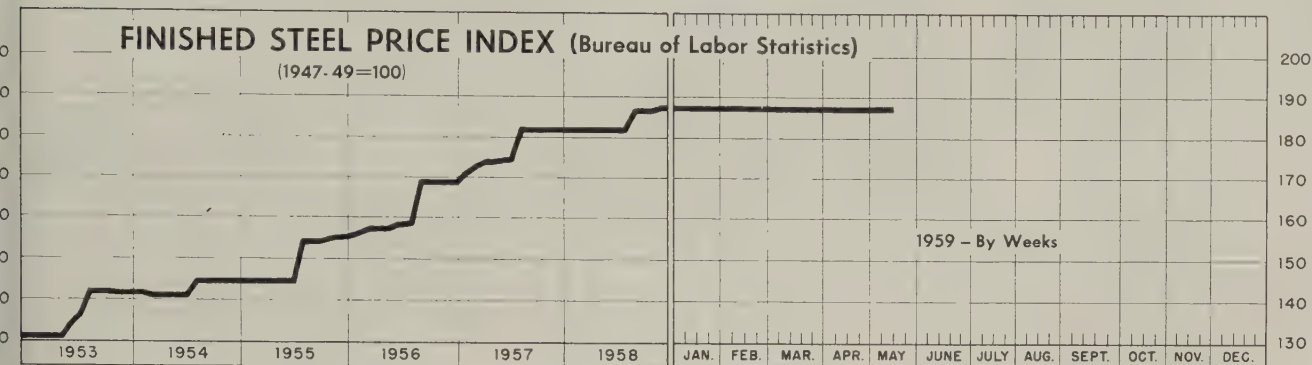
NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

(1947-49=100)



May 12, 1959

Week Ago

Month Ago

April Avg.

Year Ago

186.7

186.7

186.7

186.7

181.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended May 12

Prices include mill base prices and typical extras and deductions. Units 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Bars, Standard No. 1 ...	\$5.825	Bars, Reinforcing ...	6.385
Bars, Light, 40 lb ...	7.292	Bars, C.F., Carbon ...	10.710
Plates ...	6.875	Bars, C.F., Alloy ...	14.125
Bars, Railway ...	10.175	Bars, C.F., Stainless, 302 (lb) ...	0.570
Wheels, Freight Car, 33 in. (per wheel) ...	62.000	Sheets, H.R., Carbon ...	6.350
Wheels, Carbon ...	6.350	Sheets, C.R., Carbon ...	7.300
Structural Shapes ...	6.167	Sheets, Galvanized ...	8.615
Bars, Tool Steel, Carbon (lb) ...	0.560	Sheets, C.R., Stainless, 302 (lb) ...	0.658
Bars, Tool Steel, Alloy, Oil Hardening Die (lb) ...	0.680	Sheets, Electrical ...	12.625
Bars, Tool Steel, H.R., Alloy, High Speed, W 1.75, Cr 4.5, V 2.1, Mo 0.5, C 0.060 (lb) ...	1.400	Strip, C.R., Carbon ...	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb) ...	1.895	Strip, C.R., Stainless, 430 (lb) ...	0.480
Bars, H.R., Alloy ...	10.775	Strip, H.R., Carbon ...	6.250
Bars, H.R., Stainless, 303 (lb) ...	0.543	Pipe, Black, Butt-weld (100 ft) ...	19.905
Bars, H.R., Carbon ...	6.675	Pipe, Galv., Butt-weld (100 ft) ...	23.253
		Pipe, Line (100 ft) ...	199.530
		Casing, Oil Well, Carbon (100 ft) ...	201.080
		Casing, Oil Well, Alloy (100 ft) ...	315.213

Tubes, Boiler (100 ft) ..	51.200	Black Plate, Canmaking Quality (95 lb base box) ..	7.900
Tubing, Mechanical, Carbon (100 ft) ..	27.005	Wire, Drawn, Carbon ...	10.575
Tubing, Mechanical, Stainless, 304 (100 ft) ..	205.608	Wire, Drawn, Stainless, 430 (lb) ..	0.665
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box) ...	10.100	Bale Ties (bundles) ...	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box) ..	8.800	Nails, Wire, 8d Common ...	9.825
		Wire, Barbed (80-rod spool) ..	8.722
		Woven Wire Fence (20-rod roll) ..	21.737

STEEL'S FINISHED STEEL PRICE INDEX*

	May 13 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100) ..	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL'S ARITHMETICAL COMPOSITES*

Finished Steel, NT	\$149.96	\$149.96	\$149.96	\$145.42	\$113.70
No. 2 Fdry, Pig Iron, GT ..	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT ...	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT ...	33.33	33.67	34.67	32.83	27.67

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	May 13 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.725	4.405
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Bars, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Bars, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Bars, deld., Philadelphia ..	5.77	5.77	5.77	5.545	4.38
Bars, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Bars, Chicago	5.30	5.30	5.30	5.10	4.10
Bars, Coalesville, Pa.	5.30	5.30	5.30	5.10	4.10
Bars, Sparrows Point, Md. ..	5.30	5.30	5.30	5.10	4.10
Bars, Claymont, Del.	5.30	5.30	5.30	5.10	4.10
Bars, H.R., Pittsburgh ...	5.10	5.10	5.10	4.925	3.925
Bars, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Bars, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Bars, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Bars, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Bars, Galv., Pittsburgh ..	6.875	6.875	6.875	6.60	5.275
Bars, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Bars, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Bars, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Bars, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Bars, C.R., Detroit	7.425	7.425	7.425	7.25	5.65
Bars, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Bars, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Plate (1.50 lb) box, Pitts. ..	\$10.65	\$10.65	\$10.65	\$10.30	\$8.95

Including 0.35c for special quality.

FINISHED STEEL

Bars, forging, Pitts. (NT) ..	\$99.50	\$99.50	\$99.50	\$96.00	\$75.50
Bars, rods 3/4"-1 1/2" Pitts. ...	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	May 13 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	\$67.00	\$67.00	\$67.00	\$67.00	\$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila. ..	70.91	70.91	70.91	70.91	60.16
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld., Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton ...	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	\$34.50	\$34.50	\$36.50	\$31.50	\$29.50
No. 1 Heavy Melt, E. Pa. ...	33.50	33.50	33.50	34.50	23.00
No. 1 Heavy Melt, Chicago ..	32.00	33.00	34.00	32.50	30.50
No. 1 Heavy Melt, Valley ..	35.50	35.50	39.50	33.50	29.50
No. 1 Heavy Melt, Cleve. ...	33.50	33.50	36.00	30.50	28.50
No. 1 Heavy Melt, Buffalo. ..	31.50	32.50	34.50	26.50	25.50
Rails, Rerolling, Chicago ...	55.50	56.50	57.50	50.50	42.50
No. 1 Cast Chicago	46.50	45.50	46.50	38.50	38.50

COKE, Net Ton

Beehive, Furn., Connlsvl. ..	\$15.00	\$15.00	\$15.00	\$15.25	\$14.75
Beehive, Fdry., Connlsvl. ...	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee ...	32.00	32.00	32.00	30.50	25.25



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means automatic stocking for blast furnace charging

... loads and weighs stock house raw material into the skip hoist ... delivers predetermined ingredients to furnace at the correct time and in proper sequence ... maintains permanent record of all furnace loadings and exact time accomplished ... then indicates when a bin needs refilling or clearing. This is but one of the many ways Westinghouse PRODAC† is helping bring about the "mill of the future" today through completely automatic stocking control for blast furnace charging.

Westinghouse has proven PRODAC installations that economically automate slabbing mills, blooming mills, reversing roughers, data accumulation systems and many other mill applications.

By specifying Westinghouse PRODAC for your mill, you

open the door to many cost-saving benefits which are unobtainable with conventional controls. (For example, PRODAC assures the most consistent standards of quality control at the highest rates of production speed ... coordinates operation of all machines at the over-all maximum efficiency ... holds maintenance to a minimum and practically eliminates control failures ... gives you a "building block" design which provides the flexibility required for further mill automation.

The entire team of Westinghouse PRODAC engineers is at your service to help you determine exactly where and how PRODAC can benefit you. Your Westinghouse sales engineer can give you complete information, or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-22

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Steel Prices

Mill prices as reported to STEEL, May 13, cents per pound except as otherwise noted. *Changes shown in italics.*
Code number following mill point indicates producing company. Key to producers, page 152; footnotes, page 154.

SEMIFINISHED

COOTS, Carbon, Forging (NT)	
hnhall, Pa. U5	\$76.00
COOTS, Alloy (NT)	
troit S41	\$82.00
onomy, Pa. B14	82.00
rrrell, Pa. S3	82.00
wellville, O. S3	82.00
land, Pa. C18	82.00
hnhall, Pa. U5	82.00
aron, Pa. S3	82.00

LETS, BLOOMS & SLABS

Carbon, Rerolling (NT)	
rtionville, Ill. K4	\$82.00
ssmer, Pa. U5	80.00
ffalo R2	80.00
airton, Pa. U5	80.00
ley, Ala. T2	80.00
irfield, Ala. T2	80.00
ntana, Calif. K1	90.50
ry, Ind. U5	80.00
rry, Ind. U5	80.00
ckawanna, N.Y. B2	80.00
hnhall, Pa. U5	80.00
ensboro, Ky. G8	80.00
Chicago III. R2, U5	80.00
duquesne, Pa. U5	80.00
erling, Ill. N15	80.00
ngstown R2	80.00

Carbon, Forging (NT)

ssmer, Pa. U5	\$99.50
ffalo R2	99.50
nton, O. R2	102.00
airton, Pa. U5	99.50
hnhocken, Pa. A3	104.50
nsley, Ala. T2	99.50
irfield, Ala. T2	99.50
rrrell, Pa. S3	99.50
ntana, Calif. K1	109.00
ry, Ind. U5	99.50
eneva, Utah C11	99.50
ouston S5	104.50
hnhocken, Pa. B2	99.50
ckawanna, N.Y. B2	99.50
Los Angeles B3	109.00
ldland, Pa. C18	99.50
hnhall, Pa. U5	99.50
ensboro, Ky. G8	99.50
attle B3	109.00
aron, Pa. S3	99.50
Chicago R2, U5, W14	99.50
duquesne, Pa. U5	99.50
San Francisco B3	109.00
arren, O. C17	99.50

Alloy, Forging (NT)

thlehem, Pa. B2	\$119.00
idgeport, Conn. C32	119.00
ffalo R2	119.00
nton, O. R2, T7	119.00
hnhocken, Pa. A3	126.00
troit S41	119.00
onomy, Pa. B14	119.00
rrrell, Pa. S3	119.00
ntana, Calif. K1	140.00
ry, Ind. U5	119.00
uston S5	124.00
nd Harbor, Ind. Y1	119.00
hnhocken, Pa. B2	119.00
ckawanna, N.Y. B2	119.00
Los Angeles B3	139.00
wellville, O. S3	119.00
ssmer, O. R2	119.00
ldland, Pa. C18	119.00
hnhall, Pa. U5	119.00
ensboro, Ky. G8	119.00
ron, Pa. S3	119.00
Chicago R2, U5, W14	119.00
duquesne, Pa. U5	119.00
uthers, O. Y1	119.00
arren, O. C17	119.00

UNDS, SEAMLESS TUBE (NT)

ffalo R2	\$122.50
nton, O. R2	125.00
veland R2	122.50
ry, Ind. U5	122.50
Chicago, Ill. R2, W14	122.50
duquesne, Pa. U5	122.50
arren, O. C17	122.50

RE RODS

abama City, Ala. R2	6.40
quippa, Pa. J5	6.40
on, Ill. L1	6.60
rtionville, Ill. K4	6.50
ffalo W12	6.40
veland A7	6.40
rona, Pa. A7	6.40
irfield, Ala. T2	6.40
ouston S5	6.65
hna Harbor, Ind. Y1	6.40
hnhocken, Pa. B2	6.40
et, Ill. A7	6.40
nsas City, Mo. S5	6.65
omo, Ind. C16	6.50

Los Angeles B3	7.20
Minnequa, Colo. C10	6.65
Monessen, Pa. P7	6.40
N Tonawanda, N.Y. B11	6.40
Pittsburgh, Calif. C11	7.20
Portsmouth, O. P12	6.40
Roebbing, N.J. R5	6.50
S. Chicago, Ill. R2, W14	6.40
SparrowsPoint, Md. B2	6.50
Sterling, Ill. (1) N15	6.40
Sterling, Ill. N15	6.50
Struthers, O. Y1	6.40
Worcester, Mass. A7	6.70

STRUCTURALS

Carbon Steel Std. Shapes

Alabama City, Ala. R2	5.50
Alliquippa, Pa. J5	5.50
Atlanta A11	5.70
Bessemer, Ala. T2	5.50
Bethlehem, Pa. B2	5.55
Birmingham C15	5.50
Clairton, Pa. U5	5.50
Field, Ala. T2	5.50
Fontana, Calif. K1	6.30
Gary, Ind. U5	5.50
Geneva, Utah C11	5.50
Houston S5	5.60
Ind. Harbor, Ind. I-2, Y1	5.50
Johnstown, Pa. B2	5.55
Joliet, Ill. P22	5.50
Kansas City, Mo. S5	5.60
Lackawanna, N.Y. B2	5.55
Los Angeles B3	6.20
Minnequa, Colo. C10	5.80
Munhall, Pa. U5	5.50
Niles, Calif. P1	6.25
Phoenixville, Pa. P4	5.55
Portland, Ore. O4	6.25
Seattle B3	6.25
S. Chicago, Ill. U5, W14	5.50
S. San Francisco B3	6.15
Sterling, Ill. N15	5.50
Torrance, Calif. C11	6.20
Weirton, W. Va. W6	5.50

Wide Flange

Bethlehem, Pa. B2	5.55
Clairton, Pa. U5	5.50
Indiana, Calif. K1	6.45
Indiana Harbor, Ind. I-2	5.50
Lackawanna, N.Y. B2	5.55
Munhall, Pa. U5	5.50
Phoenixville, Pa. P4	5.55
S. Chicago, Ill. U5	5.50
Sterling, Ill. N15	5.50
Torrance, Calif. C11	6.20
Weirton, W. Va. W6	5.50

Alloy Std. Shapes

Alliquippa, Pa. J5	6.80
Clairton, Pa. U5	6.80
Gary, Ind. U5	6.80
Houston S5	6.90
Munhall, Pa. U5	6.80
S. Chicago, Ill. U5, W14	6.80

H.S., L.A., Std. Shapes

Alliquippa, Pa. J5	8.05
Bessemer, Ala. T2	8.05
Bethlehem, Pa. B2	8.10
Clairton, Pa. U5	8.05
Field, Ala. T2	8.05
Fontana, Calif. K1	8.85
Gary, Ind. U5	8.05
Geneva, Utah C11	8.05
Houston S5	8.15
Ind. Harbor, Ind. I-2, Y1	8.05
Johnstown, Pa. B2	8.10
Kansas City, Mo. S5	8.15
Lackawanna, N.Y. B2	8.10
Los Angeles B3	8.75
Munhall, Pa. U5	8.05
Seattle B3	8.80
S. Chicago, Ill. U5, W14	8.05
S. San Francisco B3	8.70
Sterling, Ill. N15	7.75
Struthers, O. Y1	8.05

H.S., L.A., Wide Flange

Bethlehem, Pa. B2	8.10
Ind. Harbor, Ind. I-2	8.05
Lackawanna, N.Y. B2	8.10
Munhall, Pa. U5	8.05
S. Chicago, Ill. U5	8.05
Sterling, Ill. N15	7.75

PILING

BEARING PILES	
Bethlehem, Pa. B2	5.55
Ind. Harbor, Ind. I-2	5.50
Lackawanna, N.Y. B2	5.55
Munhall, Pa. U5	5.50
S. Chicago, Ill. I-2, U5	5.50

STEEL SHEET PILING

Ind. Harbor, Ind. I-2	6.50
Lackawanna, N.Y. B2	6.50
Munhall, Pa. U5	6.50
S. Chicago, Ill. I-2, U5	6.50
Weirton, W. Va. W6	6.50

PLATES

PLATES, Carbon Steel	
Alabama City, Ala. R2	5.30
Alliquippa, Pa. J5	5.30

Ashland, Ky. (15) A10	5.30
Atlanta A11	5.50
Bessemer, Ala. T2	5.30
Clairton, Pa. U5	5.30
Claymont, Del. C22	5.30
Cleveland J5, R2	5.30
Coatesville, Pa. L7	5.30
Conshohocken, Pa. A3	5.30
Ecorse, Mich. G5	5.30
Field, Ala. T2	5.30
Farrell, Pa. S3	5.30
Fontana, Calif. (30) K1	6.10
Gary, Ind. U5	5.30
Geneva, Utah C11	5.30
Granite City, Ill. G4	5.40
Harrisburg, Pa. P4	5.30
Houston S5	5.40
Ind. Harbor, Ind. I-2, Y1	5.30
Johnstown, Pa. B2	5.30
Lackawanna, N.Y. B2	5.30
Mansfield, O. E6	5.30
Minnequa, Colo. C10	6.15
Munhall, Pa. U5	5.30
Newport, Ky. A2	5.30
Pittsburgh J5	5.30
Riverdale, Ill. A1	5.30
Seattle B3	6.20
Sharon, Pa. S3	5.30
S. Chicago, Ill. U5, W14	5.30
SparrowsPoint, Md. B2	5.30
Sterling, Ill. N15	5.30
Seabrook, O. W10	5.30
Warren, O. R2	5.30
Youngstown U5, Y1	5.30
Youngstown (27) R2	5.30

PLATES, Carbon Abras. Resist.

Claymont, Del. C22	7.05
Fontana, Calif. K1	7.85
Geneva, Utah C11	7.05
Houston S5	7.15
Johnstown, Pa. B2	7.05
SparrowsPoint, Md. B2	7.05

PLATES, Wrought Iron

Economy, Pa. B14	13.55
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PLATES, H.S., L.A.

Alliquippa, Pa. J5	7.95
Ashland, Ky. A10	7.95
Bessemer, Ala. T2	7.95
Clairton, Pa. U5	7.95
Claymont, Del. C22	7.95
Cleveland J5, R2	7.95
Coatesville, Pa. L7	7.95
Conshohocken, Pa. A3	7.95
Economy, Pa. B14	7.95
Ecorse, Mich. G5	7.95
Field, Ala. T2	7.95
Farrell, Pa. S3	7.95
Fontana, Calif. (30) K1	8.75
Gary, Ind. U5	7.95
Geneva, Utah C11	7.95
Houston S5	8.05
Ind. Harbor, Ind. I-2, Y1	7.95
Johnstown, Pa. B2	7.95
Munhall, Pa. U5	7.95
Pittsburgh J5	7.95
Seattle B3	8.85
Sharon, Pa. S3	7.95
S. Chicago, Ill. U5, W14	7.95
SparrowsPoint, Md. B2	7.95
Warren, O. R2	7.95
Youngstown U5, Y1	7.95

PLATES, Alloy

Alliquippa, Pa. J5	7.50
Claymont, Del. C22	7.50
Coatesville, Pa. L7	7.50
Economy, Pa. B14	7.50
Farrell, Pa. S3	7.50
Fontana, Calif. K1	8.30
Gary, Ind. U5	7.50
Houston S5	7.60
Ind. Harbor, Ind. Y1	7.50
Johnstown, Pa. B2	7.50
Lowellville, O. S3	7.50
Munhall, Pa. U5	7.50
Newport, Ky. A2	7.50
Pittsburgh J5	7.50
Seattle B3	8.40
Sharon, Pa. S3	7.50
S. Chicago, Ill. U5, W14	7.50
SparrowsPoint, Md. B2	7.50
Youngstown Y1	7.50

FLOOR PLATES

Cleveland J5	6.375
Conshohocken, Pa. A3	6.375
Ind. Harbor, Ind. I-2	6.375
Munhall, Pa. U5	6.375
Pittsburgh J5	6.375
S. Chicago, Ill. U5	6.375

PLATES, Ingot Iron

Ashland c.l. (15) A10	5.55
Ashland l.c.l. (15) A10	6.05
Cleveland c.l. R2	6.05
Warren, O. c.l. R2	6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala. City, Ala. (9) R2	5.675
Alliquippa, Pa. (9) J5	5.675

Alton, Ill. L1	5.875
Atlanta (9) A11	5.875
Bessemer, Ala. (9) T2	5.875
Birmingham (9) C15	5.875
Buffalo (9) R2	5.875
Canton, O. (23) R2	6.15
Clairton, Pa. (9) U5	5.875
Cleveland (9) R2	5.875
Ecorse, Mich. (9) G5	5.875
Emeryville, Calif. J7	6.425
Field, Ala. (9) T2	5.875
Fairless, Pa. (9) U5	5.875
Fontana, Calif. (9) K1	6.375
Gary, Ind. (9) U5	5.875
Houston (9) S5	5.925
Ind. Harbor (9) I-2, Y1	5.875
Johnstown, Pa. (9) B2	5.875
Joliet, Ill. P22	5.875
Kansas City, Mo. (9) S5	5.925
Lackawanna (9) B2	5.875
Los Angeles (9) B3	6.375
Massillon, O. (23) R2	6.15
Midland, Pa. (23) C18	6.025
Milton, Pa. M18	5.825
Minnequa, Colo. C10	6.125
Niles, Calif. P1	6.375
N.T. Wan'a, N.Y. (23) B11	6.025
Owensboro Ky. (9) G8	6.025
Pittsburgh, Calif. (9) C11	6.375
Pittsburgh (9) J5	5.875
Portland, Ore. O4	6.425
Riverdale, Ill. (9) A1	5.875
Seattle A24, B3, N14	6.625
S. Ch'c'go (9) R2, U5, W14	5.875
S. Duquesne, Pa. (9) U5	5.875
S. San Fran. Calif. (9) B3	6.425
Sterling, Ill. (1) (9) N15	5.875
Sterling, Ill. (9) N15	5.875
Struthers, O. (9) Y1	5.875
Tonawanda N.Y. B12	5.875
Torrance, Calif. (9) C11	6.375
Warren, O. C17	6.025
Youngstown (9) R2, U5	5.875

BARS, Hot-Rolled Alloy

Alliquippa, Pa. J5	6.725
Bethlehem, Pa. B2	6.725
Bridgeport, Conn. C32	6.89
Buffalo R2	6.725
Canton, O. R2 T7	6.725
Clairton, Pa. U5	6.725
Detroit S41	6.725
Economy, Pa. B14	6.725
Ecorse, Mich. G5	6.725
Fairless, Pa. U5	6.875
Farrell, Pa. S3	6.725
Fontana, Calif. K1	7.775
Gary, Ind. U5	6.725
Houston S5	6.975
Ind. Harbor, Ind. I-2, Y1	6.725
Johnstown, Pa. B2	6.725
Kansas City, Mo. S5	6.975
Lackawanna, N.Y. B2	6.725
Los Angeles B3	7.775
Lowellville, O. S3	6.725
Massillon, O. R2	6.725
Midland, Pa. C18	6.725
Owensboro, Ky. G8	6.725
Pittsburgh J5	6.725
Sharon, Pa. S3	6.725
S. Chicago R2, U5, W14	6.725
S. Duquesne, Pa. U5	6.725

BARS, Reinforcing, Billet (To Fabricators)	
Alabama City, Ala. R2	5.675
Atlanta A11	5.675
Birmingham C15	5.675
Buffalo R2	5.675
Cleveland R2	5.675
Ecorse, Mich. G5	5.675
Emeryville, Calif. J7	5.625
Fairfield, Ala. T2	5.675
Fairless, Pa. U5	5.825
Fontana, Calif. K1	6.375
Ft. Worth, Tex. (4) (26) T4	5.925
Gary, Ind. U5	5.675
Houston S5	5.925
Ind. Harbor, Ind. I-2, Y1	5.675
Johnstown, Pa. B2	5.675
Joliet, Ill. P22	5.675
Kansas City, Mo. S5	5.925
Kokomo, Ind. C16	5.775
Lackawanna, N.Y. B2	5.675
Los Angeles B3	6.375
Madison, Ill. L1	5.875
Milton, Pa. M18	5.825
Minnequa, Colo. C10	6.125
Niles, Calif. P1	6.375
Pittsburgh, Calif. C11	6.375
Pittsburgh J5	5.675
Portland, Ore. O4	6.425
Sand Springs, Okla. S5	5.925
Seattle A24, B3, N14	6.425
S. Chicago, Ill. R2, W14	5.675
S. Duquesne, Pa. U5	5.675
S. San Francisco B3	6.425
Sparrows Point, Md. B2	5.675
Sterling, Ill. (1) N15	5.675
Sterling, Ill. N15	5.675
Struthers, O. Y1	5.675
Tonawanda, N.Y. B12	6.10
Torrance, Calif. C11	6.375
Youngstown R2, U5	5.675
BARS, Reinforcing, Billet (Fabricated To Consumers)	
Baltimore B2	7.42
Boston B2, U8	8.15
Chicago U8	7.41
Cleveland U8	7.39
Houston S5	7.60
Johnstown, Pa. B2	7.33
Kansas City, Mo. S5	7.60
Lackawanna, N.Y. B2	7.35
Marion, O. P11	6.70
Newark, N.J. U8	7.80
Philadelphia U8	7.63
Pittsburgh J5, U8	7.35
Sand Springs, Okla. S5	7.60
Seattle A24, B3, N14	7.95
Sparrows Pt., Md. B2	7.33
St. Paul U8	8.17
Williamsport, Pa. S19	7.25
BARS, Wrought Iron	
Economy, Pa. (S.R.) B14	14.90
Economy, Pa. (D.R.) B14	18.55

Economy (Staybolt) B14		19.00
McK. Rks. (S.R.) L5		14.50
McK. Rks. (D.R.) L5		19.80
McK. Rks. (Staybolt) L5		20.95
BARS, Rail Steel		
Chicago Hts. (3) C2, I-2	5.575	
Chicago Hts. (4) (44) I-2	5.675	
Chicago Hts. (4) C2	5.675	
Franklin, Pa. (3) F5	5.575	
Franklin, Pa. (4) F5	5.675	
Jersey Shore, Pa. (3) J8	5.55	
Marion, O. (3) P11	5.575	
Tonawanda (3) B12	5.575	
Tonawanda (4) B12	6.10	

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)	
Alabama City, Ala. R2	5.10
Allenport, Pa. P7	5.10
Alliquippa, Pa. J5	5.10
Ashland, Ky. (8) A10	5.10
Cleveland J5, R2	5.10
Conshohocken, Pa. A3	5.15
Detroit (8) M1	5.10
Ecorse, Mich. G5	5.10
Fairfield, Ala. T2	5.10
Fairless, Pa. U5	5.15
Farrell, Pa. S3	5.10
Fontana, Calif. K1	5.825
Gary, Ind. U5	5.10
Geneva, Utah C11	5.20
Granite City, Ill. (8) G4	5.20
Ind. Harbor, Ind. I-2, Y1	5.10
Irvin, Pa. U5	5.10
Lackawanna, N.Y. B2	5.10
Mansfield, O. E6	5.10
Munhall, Pa. U5	5.10
Newport, Ky. A2	5.10
Niles, O. M21, S3	5.10
Pittsburgh, Calif. C11	5.80
Pittsburgh J5	5.10
Portsmouth, O. P12	5.10
Riverdale, Ill. A1	5.10
Sharon, Pa. S3	5.10
S. Chicago, Ill. U5, W14	5.10
Sparrows Point, Md. B2	5.10
Steuersville, O. W10	5.10
Warren, O. R2	5.10
Weirton, W. Va. W6	5.10
Youngstown U5, Y1	5.10
SHEETS, H.R. (19 Ga. & Lighter)	
Niles, O. M21, S3	6.275
SHEETS, H.R., Alloy	
Gary, Ind. U5	8.40
Ind. Harbor, Ind. Y1	8.40
Irvin, Pa. U5	8.40
Munhall, Pa. U5	8.40
Newport, Ky. A2	8.40
Youngstown U5, Y1	8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy	
Alliquippa, Pa. J5	7.525
Ashland, Ky. A10	7.525
Cleveland J5, R2	7.525
Conshohocken, Pa. A3	7.575
Ecorse, Mich. G5	7.525
Fairfield, Ala. T2	7.525
Fairless, Pa. U5	7.575
Farrell, Pa. S3	7.525
Fontana, Calif. K1	8.25
Gary, Ind. U5	7.525
Ind. Harbor, Ind. I-2, Y1	7.525
Irvin, Pa. U5	7.525
Lackawanna (35) B2	7.525
Munhall, Pa. U5	7.525
Niles, O. S3	7.525
Pittsburgh J5	7.525
S. Chicago, Ill. U5, W14	7.525
Sharon, Pa. S3	7.525
Sparrows Point (36) B2	7.525
Warren, O. R2	7.525
Weirton, W. Va. W6	7.525
Youngstown U5, Y1	7.525
SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)	
Ashland, Ky. (8) A10	5.35
Cleveland R2	5.875
Warren, O. R2	5.875
SHEETS, Cold-Rolled Ingot Iron	
Cleveland R2	7.05
Middletown, O. A10	6.775
Warren, O. R2	7.05
SHEETS, Cold-Rolled Steel (Commercial Quality)	
Alabama City, Ala. R2	6.275
Allenport, Pa. P7	6.275
Alliquippa, Pa. J5	6.275
Cleveland J5, R2	6.275
Conshohocken, Pa. A3	6.325
Detroit M1	6.275
Ecorse, Mich. G5	6.275
Fairfield, Ala. T2	6.275
Fairless, Pa. U5	6.325
Follansbee, W. Va. F4	6.275
Gary, Ind. U5	6.275
Granite City, Ill. G4	6.375
Ind. Harbor, Ind. I-2, Y1	6.275
Irvin, Pa. U5	6.275
Lackawanna, N.Y. B2	6.275
Mansfield, O. E6	6.275
Middletown, O. A10	6.275
Newport, Ky. A2	6.275
Pittsburgh, Calif. C11	7.225
Pittsburgh J5	6.275
Portsmouth, O. P12	6.275
Sparrows Point, Md. B2	6.275
Steuersville, O. W10	6.275
Warren, O. R2	6.275
Weirton, W. Va. W6	6.275
Yorkville, O. W10	6.275
Youngstown Y1	6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy	
Alliquippa, Pa. J5	9.275
Cleveland J5, R2	9.275
Ecorse, Mich. G5	9.275
Fairless, Pa. U5	9.325
Fontana, Calif. K1	10.40
Gary, Ind. U5	9.275
Ind. Harbor, Ind. I-2, Y1	9.275
Lackawanna (37) B2	9.275
Pittsburgh J5	9.275
Sparrows Point (38) B2	9.275
Warren, O. R2	9.275
Weirton, W. Va. W6	9.275
Youngstown Y1	9.275
SHEETS, Culvert	
Ala. City, Ala. R2	7.225
Ashland, Ky. A10	7.225
Canton, O. R2	7.225
Fairfield T2	7.225
Gary, Ind. U5	7.225
Granite City, Ill. G4	7.325
Ind. Harbor I-2	7.225
Irvin, Pa. U5	7.225
Kokomo, Ind. C16	7.325
Martins Ferry, W. Va.	7.225
Pitts, Calif. C11	7.975
Pittsburgh J5	7.225
Sparrows Pt. B2	7.225
SHEETS, Culvert—Pure Iron	
Ind. Harbor, Ind. I-2	7.475
SHEETS, Galvanized Steel Hot-Dipped	
Alabama City, Ala. R2	6.875†
Ashland, Ky. A10	6.875†
Canton, O. R2	6.875†
Dover, O. E6	6.875†
Fairfield, Ala. T2	6.875†
Gary, Ind. U5	6.875†
Granite City, Ill. G4	6.975†
Ind. Harbor, Ind. I-2	6.875†
Irvin, Pa. U5	6.875†
Kokomo, Ind. C16	6.975†
Martins Ferry, O. W10	6.875†
Middletown, O. A10	6.875†
Pittsburgh, Calif. C11	7.625†
Pittsburgh J5	6.875†
Sparrows Pt., Md. B2	6.875†
Warren, O. R2	6.875†
Weirton, W. Va. W6	6.875†
*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.	

SHEETS, Well Casing	
Fontana, Calif. K1	7.32
SHEETS, Galvanized High-Strength, Low-Alloy	
Irvin, Pa. U5	10.12
Pittsburgh J5	10.12
Sparrows Pt. (39) B2	10.02
SHEETS, Galvanized Steel	
Canton, O. R2	7.27
Irvin, Pa. U5	7.27
SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)	
Ashland, Ky. A10	7.1
Middletown, O. A10	7.1
SHEETS, Electrogalvanized	
Cleveland (28) B2	7.6
Niles, O. (28) R2	7.6
Weirton, W. Va. W6	7.6
Youngstown J5	7.6
SHEETS, Aluminum Coated	
Butler, Pa. A10 (type 1)	9.52
Butler, Pa. A10 (type 2)	9.62
SHEETS, Enameling Iron	
Ashland, Ky. A10	6.77
Cleveland R2	6.77
Fairfield, Ala. T2	6.77
Gary, Ind. U5	6.77
Granite City, Ill. G4	6.87
Ind. Harbor, Ind. I-2, Y1	6.77
Irvin, Pa. U5	6.77
Middletown, O. A10	6.77
Niles, O. M21, S3	6.77
Youngstown Y1	6.77
BLUED STOCK, 29 Gage	
Dover, O. E6	8.7
Follansbee, W. Va. F4	8.7
Ind. Harbor, Ind. I-2	8.7
Mansfield, O. E6	8.7
Warren, O. R2	8.7
Yorkville, O. W10	8.7
SHEETS, Long Term, Steel (Commercial Quality)	
Beech Bottom, W. Va. W10	7.22
Gary, Ind. U5	7.22
Mansfield, O. E6	7.22
Middletown, O. A10	7.22
Niles, O. M21, S3	7.22
Warren, O. R2	7.22
Weirton, W. Va. W6	7.22
SHEETS, Long Term, Ingot Iron	
Middletown, O. A10	7.62

Key To Producers

A1 Acme Steel Co.	C22 Claymont Plant, Wick-	J5 Jones & Laughlin Steel	P5 Pilgrim Drawn Steel	S43 Seymour Mfg. Co.
A2 Acme-Newport Steel Co.	wire Spencer Steel Div.,	J6 Joslyn Mfg. & Supply	P6 Pittsburgh Coke & Chem.	S44 Screw & Bolt Corp. of
A3 Alan Wood Steel Co.	Colo. Fuel & Iron	J7 Judson Steel Corp.	P7 Pittsburgh Steel Co.	America
A4 Allegheny Ludlum Steel	C23 Charter Wire Inc.	J8 Jersey Shore Steel Co.	P11 Pollak Steel Co.	T2 Tenn. Coal & Iron Div.
A5 Alloy Metal Wire Div.,		K1 Kaiser Steel Corp.	P12 Portsmouth Div.,	U. S. Steel Corp.
H. K. Porter Co. Inc.		K2 Keokuk Electro-Metals	Detroit Steel Corp.	T3 Tenn. Products & Chem.
A6 American Shm Steel Co.	C24 G. O. Carlson Inc.	K3 Keystone Drawn Steel	P13 Precision Drawn Steel	ical Corp.
A7 American Steel & Wire	C32 Carpenter Steel of N. Eng.	K4 Keystone Steel & Wire	P15 Pittsburgh Metallurgical	T4 Texas Steel Co.
Div., U. S. Steel Corp.	D2 Detroit Steel Corp.	K7 Kenmore Metals Corp.	P16 Page Steel & Wire Div.,	T5 Thomas Strip Div.,
A8 Anchor Drawn Steel Co.	D4 Diston Div., H. K. Por-	L1 Laclede Steel Co.	American Chain & Cable	Pittsburgh Steel Co.
A9 Angell Nail & Chaplet	D6 Driver-Harris Co.	L2 LaSalle Steel Co.	P17 Plymouth Steel Corp.	T6 Thompson Wire Co.
A10 Armco Steel Corp.	D7 Dickson Weatherproof	L3 Latrobe Steel Co.	P19 Pitts. Rolling Mills	T7 Timken Roller Bearing
A11 Atlantic Steel Co.	Nail Co.	L6 Lone Star Steel Co.	P20 Prod. Steel Strip Corp.	T9 Tonawanda Iron Div.,
A24 Alaska Steel Mills Inc.	D8 Damascus Tube Co.	L7 Lukens Steel Co.	P22 Phoenix Mfg. Co.	Am. Rad. & Stan. San
B1 Babcock & Wilcox Co.	D9 Wilbur B. Driver Co.	L8 Leschen Wire Rope Div.,	P24 Phil. Steel & Wire Corp.	T13 Tube Methods Inc.
B2 Bethlehem Steel Co.	E1 Eastern Gas & Fuel Assoc.	H. K. Porter Co. Inc.	R2 Republic Steel Corp.	T19 Techalloy Co. Inc.
B3 Beth. Pac. Coast Steel	E2 Eastern Stainless Steel	M1 McLouth Steel Corp.	R3 Rhode Island Steel Corp.	U3 Union Wire Rope Corp.
B4 Blair Strip Steel Co.	E5 Elliott Bros. Steel Co.	M4 Mahoning Valley Steel	R5 Roebling's Sons, John A.	U4 Universal-Cyclops Steel
B5 Bliss & Laughlin Inc.	E6 Empire-Reeves Steel	M6 Mercer Pipe Div., Saw-	R6 Rome Strip Steel Co.	U5 United States Steel Corp.
B8 Braeburn Alloy Steel	Corp.	hill Tubular Products	R8 Reliance Div., Eaton Mfg.	U6 U. S. Pipe & Foundry
B9 Brainard Steel Div.,	E10 Enamel Prod. & Plating	M8 Mid-States Steel & Wire	R9 Rome Mfg. Co.	U7 Ulbrich Stainless Steels
Sharon Steel Corp.	F2 Fifth Sterling Inc.	M12 Moltrup Steel Products	R10 Rodney Metals Inc.	U8 U. S. Steel Supply Div.,
B10 E. & G. Brooke, Wick-	F3 Fitzsimmons Steel Co.	M14 McInnes Steel Co.	S1 Seneca Wire & Mfg. Co.	U11 Union Carbide Metals Co.
wire Spencer Steel Div.,	F4 Follansbee Steel Corp.	M16 Md. Fine & Specialty	S3 Sharon Steel Corp.	U13 Union Steel Corp.
Colo. Fuel & Iron	F5 Franklin Steel Div.,	Wire Co. Inc.	S4 Sharon Tube Co.	V2 Vanadium-Alloys Steel
B11 Buffalo Bolt Co., Div.,	Borg-Warner Corp.	M17 Metal Forming Corp.	S5 Sheffield Div.,	V3 Vulcan-Kidd Steel
Buffalo Eclipse Corp.	F6 Fretz-Moom Tube Co.	M18 Milton Steel Div.,	Armco Steel Corp.	Div., H. K. Porter Co.
B12 Buffalo Steel Corp.	F7 Ft. Howard Steel & Wire	M21 Mallory-Sharon	S6 Shenango Furnace Co.	W1 Wallace Barnes Steel
B14 A. M. Byers Co.	F8 Ft. Wayne Metals Inc.	Metals Corp.	S7 Simmons Co.	Div., Associated Spring
B15 J. Bishop & Co.	G4 Granite City Steel Co.	M22 Mill Strip Products Co.	S8 Simonds Saw & Steel Co.	Corp.
C1 Calstrip Steel Corp.	G5 Great Lakes Steel Corp.	N1 National-Standard Co.	S12 Spencer Wire Corp.	W2 Wallingford Steel Co.
C2 Calumet Steel Div.,	G6 Greer Steel Co.	N2 National Supply Co.	S13 Standard Forgings Corp.	W3 Washburn Wire Co.
Borg-Warner Corp.	G8 Green River Steel Corp.	N3 National Tube Div.,	S14 Standard Tube Co.	W4 Washington Steel Corp.
C4 Carpenter Steel Co.	H1 Hanna Furnace Corp.	U. S. Steel Corp.	S15 Stanley Works	W6 Weirton Steel Co.
C9 Colonial Steel Co.	H7 Helical Tube Co.	N5 Nelson Steel & Wire Co.	S17 Superior Drawn Steel Co.	W8 Western Automatic
C10 Colorado Fuel & Iron	I-1 Igoe Bros. Inc.	N6 New England High	S18 Superior Steel Div.,	Machine Screw Co.
C11 Columbia-Geneva Steel	I-2 Inland Steel Co.	Carbon Wire Co.	S19 Sweet's Steel Co.	W9 Wheatland Tube Co.
Div., U. S. Steel Corp.	I-3 Interlake Iron Corp.	N8 Newman-Crosby Steel	S20 Southern States Steel	W10 Wheeling Steel Corp.
C12 Columbia Steel & Shaft.	I-4 Ingersoll Steel Div.,	N14 Northwest Steel Rolling	S23 Superior Tube Co.	W12 Wickwire Spencer Steel
C13 Columbia Tool Steel Co.	Borg-Warner Corp.	Mills Inc.	S25 Stainless Welded Prod.	Div., Colo. Fuel & Iron
C14 Compressed Steel Shaft.	I-6 Ivins Steel Tube Works	N15 Northwestern S. & W. Co.	S26 Specialty Wire Co. Inc.	W13 Wilson Steel & Wire Co.
C15 Connors Steel Div.,	I-7 Indiana Steel & Wire Co.	N20 Neville Ferro Alloy Co.	S30 Sierra Drawn Steel Corp.	W14 Wisconsin Steel Div.,
H. K. Porter Co. Inc.	J1 Jackson Iron & Steel Co.	P1 Pacific States Steel Corp.	S40 Seneca Steel Service	International Harvester
C16 Continental Steel Corp.	J3 Jessop Steel Co.	P2 Pacific Tube Co.	S41 Stainless & Strip Div.,	W15 Woodward Iron Co.
C17 Copperweld Steel Co.	J4 Johnson Steel & Wire Co.	P4 Phoenix Steel Corp.	J & L Steel Corp.	W18 Wyckoff Steel Co.
C18 Crucible Steel Co.			S42 Southern Elec. Steel Co.	Y1 Youngstown Sheet & Tube
C19 Cumberland Steel Co.				
C20 Cuyahoga Steel & Wire				

STRIP

IP, Hot-Rolled Carbon

City, Ala. (27) R2	5.10
Port, Pa. P7	5.10
on, Ill. L1	5.30
land, Ky. (8) A10	5.10
anta A11	5.10
semer, Ala. T2	5.10
irmingham C15	5.10
ffalo (27) R2	5.10
shohocken, Pa. A3	5.15
roit M1	5.10
orse, Mich. G5	5.10
rfield, Ala. T2	5.10
rell, Pa. S3	5.10
ntana, Calif. K1	5.325
ry, Ind. U5	5.10
.Harbor, Ind. I-2, Y1	5.10
nstown, Pa. (25) B2	5.10
akawanna, N.Y. (25) B2	5.10
Angles (25) B3	5.85
Angles C1	8.60
nequa Colo. C10	6.20
erde, Ill. A1	5.10
Francisco S7	6.60
tle (25) B3	6.10
tle N14	6.60
ron, Pa. S3	5.10
hicago W14	5.10
an Francisco (25) B3	5.85
rows Point, Md. B2	5.10
rance, Calif. C11	5.85
ren, O. R2	5.10
rtion, W. Va. W6	5.10
ngstown U5	5.10

IP, Hot-Rolled Alloy

egle, Pa. S18	8.40
rell, Pa. S3	8.40
ry, Ind. U5	8.40
iston S5	8.65
.Harbor, Ind. Y1	8.40
as City, Mo. S5	8.65
Angles B3	9.60
vellville, O. S3	8.40
port, Ky. A2	8.40
ron, Pa. A2, S3	8.40
hicago, Ill. W14	8.40
ngstown U5, Y1	8.40

IP, Hot-Rolled High-Strength, Low-Alloy

land, Ky. A10	7.575
semer, Ala. T2	7.575
shohocken, Pa. A3	7.575
orse, Mich. G5	7.575
rfield, Ala. T2	7.575
rell, Pa. S3	7.575
ry, Ind. U5	7.575
.Harbor, Ind. I-2, Y1	7.575
akawanna, N.Y. B2	7.575
Angles (25) B3	8.325
tle (25) B3	8.575
ron, Pa. S3	7.575
hicago, Ill. W14	7.575
an Francisco (25) B3	8.325
rows Point, Md. B2	7.575
ren, O. R2	7.575
rtion, W. Va. W6	7.575
ngstown U5, Y1	7.575

IP, Hot-Rolled Ingot Iron

land, Ky. (8) A10	5.35
ren, O. R2	5.375

IP, Cold-Rolled Carbon

erson, Ind. G6	7.425
timore T6	7.425
ffalo T6	7.975
ffalo S40	7.425
eland A7, J5	7.425
arborn, Mich. S3	7.425
roit D2, M1, P20	7.425
er, O. G6	7.425
nston, Ill. M22	7.525
rell, Pa. S3	7.425
iansbee, W. Va. F4	7.425
ntana, Calif. K1	9.20
nklind Park Ill. T6	7.525
.Harbor, Ind. Y1	7.425
napolis S41	7.575
Angles C1, S41	9.30
eesport, Pa. E10	7.525
Bedford, Mass. R10	7.875
Brittain, Conn. S15	7.875
Castle, Pa. B4, E5	7.425
aven, Conn. D2	7.875
vensington, Pa. A6	7.425
vtucket, R.I. R3	7.975
vtucket, R.I. N8	7.975
delphia P24	7.875
sburgh J5	7.425
erde, Ill. A1	7.525
on, N.Y. (32) R6	7.425
ron, Pa. S3	7.425
nton, N.J. (31) R5	8.875
lifford, Conn. W2	7.875
ren, O. R2, T5	7.425
rester, Mass. A7	7.975
ngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie, Pa. S18	15.55
Cleveland A7	15.55
Dover, O. G6	15.55
Farrell, Pa. S3	15.55
Franklin Park, Ill. T6	15.55
Harrison, N.J. C18	15.55
Indianapolis S41	15.70
Los Angeles A7	17.75
Louellville, O. S3	15.55
Pawtucket, R.I. N8	15.90
Riverdale, Ill. A1	15.55
Sharon, Pa. S3	15.55
Worcester, Mass. A7	15.85
Youngtown S41, Y1	7.425

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn, Mich. S3	10.80
Dover, O. G6	10.80
Farrell, Pa. S3	10.80
Ind Harbor, Ind. Y1	10.80
Sharon, Pa. S3	10.80
Warren, O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	10.70	12.90	16.10	19.30	
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. S3	9.05	10.50	12.70		
Detroit D2	9.05	10.50	12.70	15.70	
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M22	8.95	10.40	12.60	15.60	
Farrell, Pa. S3	8.95	10.40	12.60	15.60	18.55
Postoria, O. S1	10.05	10.40	12.60	15.60	
Franklin Park, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison, N.J. C18	9.10	10.55	12.60	15.60	
Los Angeles C1	11.15	12.60	14.80	17.80	
Los Angeles S41	11.15	12.60	14.80		
New Britain, Conn. S15	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. B4, E5	8.95	10.40	12.60	15.60	
New Haven Conn. D2	9.40	10.70	12.90	15.90	
New Kensington, Pa. A6	9.85	10.40	12.60	15.60	
New York W3	10.70	12.90	16.10	19.30	
Pawtucket, R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome, N.Y. (32) R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton, N.J. R5	10.70	12.90	15.90	18.85	
Wallfording, Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren, O. T5	8.95	10.40	12.60	15.60	18.55
Worcester Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngtown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

Bristol, Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85		
Postoria, O. S1	19.05	22.15	
Franklin Park, Ill. T6	19.20	23.30	28.15
Harrison, N.J. C18	18.85	22.95	27.80
New York W3	18.85	22.95	27.80
Palmer, Mass. W12	18.85		
Trenton, N.J. R5	18.85	22.95	27.80
Worcester, Mass. A7, T6	18.85	22.95	27.80
Youngtown S41	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)

Albuquerque, Pa. J5	\$9.10	\$9.35	\$9.75
Fairfield, Ala. T2	9.20	9.45	9.85
Fairless, Pa. U5	9.20	9.45	9.85
Fontana, Calif. K1	9.75	10.00	10.40
Gary, Ind. U5	9.10	9.35	9.75
Granite City, Ill. G4	9.20	9.45	9.60
Indiana Harbor, Ind. I-2, Y1	9.10	9.35	9.75
Irvin, Pa. U5	9.10	9.35	9.75
Niles, O. R2	9.10	9.35	9.75
Pittsburg, Calif. C11	9.75	10.00	10.40
Sparrows Point, Md. B2	9.10	9.35	9.75
Weirton, W. Va. W6	9.10	9.35	9.75
Yorkville, O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per lb)

Indiana Harbor, Ind. Y1 (20-27 Ga.)	7.90		
Niles, O. R2 (20-27 Ga.)	7.90	8.10	8.30
Albuquerque, Pa. J5 (21-27 Ga.)	7.90	8.10	

TIN PLATE, American 1.25 lb

Albuquerque, Pa. J5	\$10.40	\$10.65
Fairfield, Ala. T2	10.50	10.75
Fairless, Pa. U5	10.50	10.75
Fontana, Calif. K1	11.05	11.30
Gary, Ind. U5	10.40	10.65
Ind. Harb. Y1	10.40	10.65
Pitts., Calif. C11	11.05	11.30
Sp. Pt., Md. B2	10.40	10.65
Weirton, W. Va. W6	10.40	10.65
Yorkville, O. W10	10.40	10.65

BLACK PLATE (Base Box)

Albuquerque, Pa. J5	\$8.20
Fairfield, Ala. T2	8.30
Fairless, Pa. U5	8.30
Fontana, Calif. K1	8.85
Gary, Ind. U5	8.20
Granite City, Ill. G4	8.30
Ind. Harbor, Ind. I-2, Y1	8.20

Weirton, W. Va. W6	10.80
Youngtown Y1	10.80

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2	8.175
STRIP, C. R. Electroalvanized	
Cleveland A7	7.425*
Dover, O. G6	7.425*
Evanston, Ill. M22	7.525*
McKeesport, Pa. E10	7.50*
Riverdale, Ill. A1	7.525*
Warren, O. B9, S3, T5	7.425*
Worcester, Mass. A7	7.975
Youngtown S41	7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell, Pa. S3	7.50
Sharon, Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell, Pa. S3	5.525
Riverdale, Ill. A1	5.675
Sharon, Pa. S3	5.525
Youngtown U5	5.525

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed 1/2c lower)	Field	Armature	Elec- tric	Motor	Dyna- mo
Beech Bottom, W. Va. W10	11.70	12.40	13.35	14.65	
Brackenridge, Pa. A4		12.40	13.55	14.65	
Granite City, Ill. G4	9.875*11.30*	12.00*	13.15*		
Indiana Harbor Ind. I-2	9.875*11.20*	11.90*	13.05*		
Mansfield, O. E6	9.875*11.70	12.40	13.55	14.65	
Newport, Ky. A2	9.875*11.70*	12.40*	13.55*14.65*		
Niles, O. M21	9.875*11.70	12.40	13.55		
Vandergrift, Pa. U5	9.875*11.70	12.40	13.55	14.65	
Warren, O. R2	9.875*11.70	12.40	13.55	14.65	
Zanesville, O. A10	11.70†	12.40	13.55	14.65	

Vandergrift, Pa. U5	8.10
Mansfield, O. E6	8.10
Warren, O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed 1/2c lower)	T-72	T-65	T-58	T-52
Beech Bottom, W. Va. W10	15.70	16.30	16.80	17.85
Vandergrift, Pa. U5	15.70	16.30	16.80	17.85
Zanesville, O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)

Grain Oriented	T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge, Pa. A4	18.10	19.70	20.20	20.70	15.70††	
Butler, Pa. A10		19.70	20.20	20.70		
Vandergrift, Pa. U5	17.10	18.10	19.70	20.20	20.70	
Warren, O. R2					15.70†	

*Semiprocessed. †Fully processed only. ‡Coils, annealed; semiprocessed 1/2c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

Alabama City, Ala. R2	8.00
Alliquippa, Pa. J5	8.00
Alton, Ill. L1	8.20
Atlanta A1	8.00
Bartonville, Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville, Ind. M8	8.10
Donora, Pa. A7	8.00
Duluth A7	8.00
Fairfield, Ala. T2	8.00
Postoria, O. (24) S1	8.10
Houston S5	8.25
Jacksonville, Fla. M8	8.35
Johnstown, Pa. B2	8.00
Joliet, Ill. A7	8.00
Kansas City, Mo. S5	8.25
Kokomo, Ind. C16	8.10
Los Angeles B3	8.95
Minnequa, Colo. C10	8.25
Monessen, Pa. P7, P16	8.00
N. Tonawanda, N.Y. B11	8.00
Palmer, Mass. W12	8.30
Pittsburg, Calif. C11	8.95
Portsmouth, O. P12	8.00
Rankin, Pa. A7	8.00
S. Chicago, Ill. R2	8.00
S. San Francisco C10	8.95
Sparrows Point, Md. B2	8.10
Sterling, Ill. (1) N15	8.00
Sterling, Ill. N15	8.10
Struthers, O. Y1	8.00
Waukegan, Ill. A7	8.00
Worcester, Mass. A7	8.30

WIRE, MB Spring, High-Carbon

Alliquippa, Pa. J5	9.75
Alton, Ill. L1	9.95
Bartonville, Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora, Pa. A7	9.75
Duluth A7	9.75
Postoria, O. S1	9.80
Johnstown, Pa. B2	9.75
Kansas City, Mo. S5, U3	10.00
Los Angeles B3	10.70
Milbury, Mass. (12) N6	10.05
Minnequa, Colo. C10	9.95
Monessen, Pa. P7, P16	9.75
Muncie, Ind. I-7	9.95
Palmer, Mass. W12	10.05
Pittsburg, Calif. C11	10.70
Portsmouth, O. P12	9.75
Roebing, N.J. R5	10.05
S. Chicago, Ill. R2	9.75
S. San Francisco C10	10.70
Sparrows Pt., Md. B2	9.85
Struthers, O. Y1	9.75
Trenton, N.J. A7	10.05
Waukegan, Ill. A7	9.75
Wor'ster, Mass. A7, J4, T6	10.05

WIRE, Cold-Rolled Flat

Anderson, Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville, Ind. M8	12.35
Dover, O. G6	12.35
Farrell, O. S1	12.35
Fostoria, O. S3	12.35
Franklin Park, Ill. T6	12.45
Kokomo, Ind. C16	12.35
Massillon, O. R8	12.35
Milwaukee C23	12.55
Monessen, Pa. P7, P16	12.35
Palmer, Mass. W12	12.65
Pawtucket, R.I. N8	11.95
Philadelphia P24	12.65
Riverdale, Ill. A1	12.45
Rome, N.Y. R6	12.35
Sharon, Pa. S3	12.35
Trenton, N.J. R5	12.65
Warren, O. B9	12.35
Worcester, Mass. A7, T6	12.65

NAILS, Stock

Alabama City, Ala. R2	173
Aliquippa, Pa. J5	173
Atlanta A11	175
Bartonville, Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville, Ind. M8	175
Donora, Pa. A7	173
Duluth A7	173
Fairfield, Ala. T2	173
Houston S5	178
Jacksonville, Fla. M8	175
Johnstown, Pa. B2	175
Joliet, Ill. A7	173
Kansas City, Mo. S5	178
Kokomo, Ind. C16	175
Minneapolis, Colo. C10	178
Monessen, Pa. P7	173
Pittsburg, Calif. C11	192
Rankin, Pa. A7	173
S. Chicago, Ill. R2	173
Sparrows Pt., Md. B2	175
Sterling, Ill. (7) N15	175
Worcester, Mass. A7	179

(To Wholesalers; per cwt)
Galveston, Tex. D7 \$10.30

NAILS, Cut (100 lb keg)

To Distributors (33)
Wheeling, W. Va. W10 \$10.10

POLISHED STAPLES

Alabama City, Ala. R2	175
Aliquippa, Pa. J5	173
Atlanta A11	177
Bartonville, Ill. K4	175
Crawfordsville, Ind. M8	177
Donora, Pa. A7	173
Duluth A7	173
Fairfield, Ala. T2	173
Houston S5	180
Jacksonville, Fla. M8	177
Johnstown, Pa. B2	175
Joliet, Ill. A7	173
Kansas City, Mo. S5	180
Kokomo, Ind. C16	177
Minneapolis, Colo. C10	180
Pittsburg, Calif. C11	194
Rankin, Pa. A7	173
S. Chicago, Ill. R2	175
Sparrows Pt., Md. B2	177
Sterling, Ill. (7) N15	175
Worcester, Mass. A7	181

TIE WIRE, Automatic Baler (1 1/2 Ga.) (per 97 lb Net Box)

Alabama City, Ala. R2	\$9.24
Atlanta A11	10.36
Bartonville, Ill. K4	9.34
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville, Ind. M8	9.34
Donora, Pa. A7	9.24
Duluth A7	9.24
Fairfield, Ala. T2	9.24
Houston S5	10.51
Jacksonville, Fla. M8	9.34
Johnstown, Pa. B2	10.26
Joliet, Ill. A7	9.24
Kansas City, Mo. S5	10.51
Kokomo, Ind. C16	9.34
Los Angeles B3	11.05
Minneapolis, Colo. C10	10.51
Pittsburg, Calif. C11	9.94
S. Chicago, Ill. R2	9.24
S. San Francisco C10	11.04
Sparrows Pt., Md. B2	10.36
Sterling, Ill. (37) N15	9.24

Coil No. 6500 Stand.

Alabama City, Ala. R2	\$9.54
Atlanta A11	10.70
Bartonville, Ill. K4	9.64
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville, Ind. M8	9.64

Donora, Pa. A7	9.54
Duluth A7	9.54
Fairfield, Ala. T2	9.54
Houston S5	10.85
Jacksonville, Fla. M8	9.64
Johnstown, Pa. B2	10.60
Joliet, Ill. A7	9.54
Kansas City, Mo. S5	10.85
Kokomo, Ind. C16	9.84
Los Angeles B3	11.40
Minneapolis, Colo. C10	10.85
Pittsburg, Calif. C11	10.26
S. Chicago, Ill. R2	9.54
S. San Francisco C10	11.40
Sparrows Pt., Md. B2	10.70
Sterling, Ill. (37) N15	9.54

Coil No. 6500 Interim

Alabama City, Ala. R2	\$9.59
Atlanta A11	10.75
Bartonville, Ill. K4	9.69
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville, Ind. M8	9.69
Donora, Pa. A7	9.59
Duluth A7	9.59
Fairfield, Ala. T2	9.59
Houston S5	10.90
Jacksonville, Fla. M8	9.69
Johnstown, Pa. B2	10.65
Joliet, Ill. A7	9.59
Kansas City, Mo. S5	10.90
Kokomo, Ind. C16	9.69
Los Angeles B3	11.45
Minneapolis, Colo. C10	10.90
Pittsburg, Calif. C11	10.31
S. Chicago, Ill. R2	9.59
S. San Francisco C10	11.45
Sparrows Pt., Md. B2	10.75
Sterling, Ill. (37) N15	9.59

BALE TIES, Single Loop

Alabama City, Ala. R2	212
Atlanta A11	214
Bartonville, Ill. K4	214
Crawfordsville, Ind. M8	214
Donora, Pa. A7	212
Duluth A7	212
Fairfield, Ala. T2	212
Houston S5	217
Jacksonville, Fla. M8	214
Joliet, Ill. A7	212
Kansas City, Mo. S5	217
Kokomo, Ind. C16	214
Minneapolis, Colo. C10	217
Pittsburg, Calif. C11	236
S. San Francisco C10	236
Sparrows Pt., Md. B2	214
Sterling, Ill. (7) N15	214

FENCE POSTS

Birmingham C15	177
Chicago Hts., Ill. C2, I-2	177
Duluth A7	177
Franklin, Pa. F5	177
Johnstown, Pa. B2	177
Marion, O. P11	177
Minneapolis, Colo. C10	182
Tonawanda, N.Y. B12	177

WIRE, Barbed

Alabama City, Ala. R2	193**
Aliquippa, Pa. J5	190*
Atlanta A11	198*
Bartonville, Ill. K4	198
Crawfordsville, Ind. M8	198
Donora, Pa. A7	193*
Duluth A7	193*
Fairfield, Ala. T2	193*
Houston S5	198**
Jacksonville, Fla. M8	198
Johnstown, Pa. B2	196*
Joliet, Ill. A7	193*
Kansas City, Mo. S5	198**
Kokomo, Ind. C16	195*
Minneapolis, Colo. C10	198**
Monessen, Pa. P7	196*
Pittsburg, Calif. C11	213*
Rankin, Pa. A7	193*
S. Chicago, Ill. R2	193**
S. San Francisco C10	213*
Sparrows Pt., Md. B2	198*
Sterling, Ill. (7) N15	198**

WOVEN FENCE, 9-15 Ga.

Ala. City, Ala. R2	187**
Aliquippa, Pa. 9-11 1/2 Ga. J5	190*
Atlanta A11	192*
Bartonville, Ill. K4	192
Crawfordsville, Ind. M8	192
Donora, Pa. A7	187*
Duluth A7	187*
Fairfield, Ala. T2	187*
Houston S5	192**
Jacksonville, Fla. M8	192
Johnstown, Pa. (43) B2	190*
Joliet, Ill. A7	187*
Kansas City, Mo. S5	192**
Kokomo, Ind. C16	189*
Minneapolis, Colo. C10	192**
Pittsburg, Calif. C11	210*
Rankin, Pa. A7	187*
S. Chicago, Ill. R2	187**
Sterling, Ill. (7) N15	192**

WIRE (16 gage) Stone	Stone
Ala. City, Ala. R2	17.85 19.40**
Aliquippa, Pa. J5	17.85 19.65
Bartonville, K4	17.95 19.50
Cleveland A7	17.85
Crawdville M8	17.95 19.80**
Fostoria, O. S1	18.35 19.90**
Houston S5	18.10 19.65**
Jacksonville M8	17.95 19.80**
Johnstown B2	17.85 19.65*
Kan. City, Mo. S5	18.10
Kokomo C16	17.25 18.80*
Minneapolis C10	18.10 19.65**
P'lm'r, Mass. W12	18.15 19.70*
Pitts., Calif. C11	18.20 19.75*
S. San Fran. C10	18.20 19.75**
St'ling (37) N15	17.25 19.05**
Sparrows Pt. B2	17.95 19.75*
Waukegan A7	17.85 19.40**
Worcester A7	18.15

WIRE, Merchant Quality

Ala. City, Ala. R2	9.00 9.55**
Aliquippa J5	8.65 9.325*
Atlanta (48) A11	9.10 9.775*
Bartonville (48) K4	9.10 9.80
Buffalo W12	9.00 9.55*
Cleveland A7	9.00
Crawfordsville M8	9.10 9.80**
Donora, Pa. A7	9.00 9.55*
Duluth A7	9.00 9.55*
Fairfield T2	9.00 9.55*
Houston (48) S5	9.25 9.80**
Jackville, Fla. M8	9.10 9.80**
Johnstown (48) B2	9.00 9.675*
Joliet, Ill. A7	9.00 9.55*
Kans. City (48) S5	9.25 9.80**
Kokomo (48) S16	9.10 9.65*
Los Angeles B3	9.95 10.625*
Monessen (48) P7	8.65 9.35*
Palmer, Mass. W12	9.30 9.85*
Pitts., Calif. C11	9.95 10.50*
Rankin, Pa. A7	9.00 9.55*
S. Chicago R2	9.00 9.55**
S. San Fran. C10	9.95 10.50**
Sparrows Pt. (48) B2	9.10 9.775*
St'ling (1) (48) N15	9.00 9.70*
Struthers, O. Y1	9.00 9.65*
Worcester, Mass. A7	9.30 9.85*

Based on zinc price of:
\$13.50. †5c. ‡10c. †Less
than 10c. ††10.50c. †††10.0c.
**Subject to zinc equaliza-
tion extras. \$11.50c.

FASTENERS

(Base discounts, shipments
of one to four containers, per
cent off list, f.o.b. mill)

BOLTS

Machine Bolts	
Full Size Body (cut thread)	
1/2 in. and smaller:	
3 in. and shorter	55.0
3 1/2 in. thru 6 in.	50.0
Longer than 6 in.	37.0
1/2 in., 3 in. & shorter	47.0
3 1/2 in. thru 6 in.	40.0
Longer than 6 in.	31.0
1/2 in. thru 1 in.:	
6 in. and shorter	37.0
Longer than 6 in.	31.0
1 1/2 in. and larger:	
All lengths	31.0
Undersize Body (rolled thread)	
1/2 in. and smaller:	
3 in. and shorter	55.0
3 1/2 in. thru 6 in.	50.0
Carriage Bolts	
Full Size Body (cut thread) & Undersize Body (rolled thread)	
1/2 in. and smaller:	
6 in. and shorter	48.0
Larger diameters and longer length	35.0

Lag, Flaw, Tap, Blank
Step, Elevator, Tire, and
Fitting Up Bolts

1/2 in. and smaller:	
6 in. and shorter	48.0
Larger diameters and longer lengths	35.0
High Tensile Structural Bolts (Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts - High-carbon steel, heat treated, Spec. ASTM A-325, in bulk. Full keg quantity)	
1/2 in. diam	50.0
3/4 in. diam	47.0
1/2 and 1 in. diam	43.0
1 1/2 and 1 3/4 in. diam	34.0

NUTS

(Keg or case quantity and over)	
Square Nuts, Reg. & Heavy:	
All sizes	56.0

(Full container)	
Hex Nuts, Reg. & Heavy	
Hot Pressed & Cold Punched:	
1/2 in. and smaller	62.0
3/4 in. to 1 1/2 in., incl.	56.0
1 1/2 in. and larger	51.5
Hex Nuts, Semifinished, Heavy (Incl. Slotted):	
3/4 in. and smaller	62.0
1/2 in. to 1 1/2 in., incl.	56.0
1 1/2 in. and larger	51.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
3/4 in. and smaller	65.0
1 in. to 1 1/2 in., incl.	57.0
1 1/2 in. and larger	51.5
Semifinished Hex Nuts, Reg. (Incl. Slotted):	
3/4 in. and smaller	62.0
1/2 in. to 1 1/2 in., incl.	65.0
1 in. to 1 1/2 in., incl.	57.0
1 1/2 in. and larger	51.5
CAP AND SETSCREWS (Base discounts, packages, per cent off list, f.o.b. mill)	
Hex Head Cap Screws, Coarse or Fine Thread, Bright:	
6 in. and shorter:	
1/2 in. and smaller	35.0
3/4, 1/2, and 1 in.	16.0

BOILER TUBES

Net base c.l. prices, dollars per 100 ft. mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	C.D. H.R.	Elec. W. H.R.
1	13	27.24	23.13	
1 1/2	13	32.25	24.41	
1 3/4	13	30.42	26.95	
2	13	35.94	31.89	
2 1/2	13	40.28	35.74	
3	13	45.36	40.26	
3 1/2	12	49.24	43.70	
4	12	54.23	48.13	
4 1/2	12	58.73	52.13	
5	12	62.62	55.59	

RAILWAY MATERIALS

Standard	No. 1	No. 2	All	60
Rails				
Bessemer, Pa. U5	5.75	5.65	6.71	6.71
Ensley, Ala. T2	5.75	5.65	6.71	6.71
Fairfield, Ala. T2	5.75	5.65	6.71	6.71
Gary, Ind. U5	5.75	5.65	6.71	6.71
Huntington, W. Va. C15	5.75	5.65	6.71	6.71
Johnstown, Pa. B2	5.75	5.65	6.71	6.71
Lackawanna, N.Y. B2	5.75	5.65	6.71	6.71
Minneapolis, Colo. C10	5.75	5.65	6.71	6.71
Steelton, Pa. B2	5.75	5.65	6.71	6.71
Williamsport, Pa. S19	5.75	5.65	6.71	6.71

TIE PLATES

Fairfield, Ala. T2	6.875
Gary, Ind. U5	6.875
Lackawanna, N.Y. B2	6.875
Minneapolis, Colo. C10	6.875
Seattle B3	7.025
Steelton, Pa. B2	6.875
Torrance, Calif. C11	6.875

JOINT BARS

Bessemer, Pa. U5	7.25
Fairfield, Ala. T2	7.25
Joliet, Ill. U5	7.25
Lackawanna, N.Y. B2	7.25
Minneapolis, Colo. C10	7.25
Steelton, Pa. B2	7.25
Ind. Harbor, Ind. S13	9.125
Johnstown, Pa. B2	9.125

Footnotes

(1) Chicago base.	(25) Bar mill bands.
(2) Angles, flats, bands.	(26) Deld. in mill zone, 6.29
(3) Merchant.	(27) Bar mill sizes.
(4) Reinforcing.	(28) Bonderized.
(5) 1 1/2 to under 1 7/16 in.;	(29) Youngstown base.
1 7/16 to under 1 5/16 in.,	(30) Shared; for universal m
6.70c. 1 5/16 to 3 in.,	add 0.45c.
inclusive, 7.05c.	(31) Widths over 3/4 in.; 7.37
(6) Chicago or Birm. base.	for widths 3/4 in. and un
(7) Chicago base 2 cols. lower.	by 1.125 in. and thinner
(8) 16 Ga. and heavier.	(32) Buffalo base.
(9) Merchant quality; add 0.35c	(33) To jobbers, deduct 20c.
for special quality.	(34) 9.60c. for cut lengths.
(10) Pittsburgh base.	(35) 72" and narrower.
(11) Cleveland & Pitts. base.	(36) 54" and narrower.
(12) Worcester, Mass., base.	(37) Chicago base, 10 pol
(13) Add 0.35c for 17 Ga. &	low
heavier.	(38) 16 Ga. & lighter; 60"
(14) 0.143 to 0.249 in.;	narrower.
for gage 0.142 and lighter,	(39) 48" and narrower.
5.80c.	(40) Lighter than 0.035"; 0.0
(15) 3/4" and thinner.	and heavier, 0.25c higher
(16) 40 lb and under.	(41) 9.10c. for cut lengths.
(17) Flats; only; 0.25 in. &	(42) 10.00c. for cut l.o.b.m.
heavier.	meld. in mill zone or wlt
(18) To dealers.	switching limits, 5.635c.
(19) Chicago & Pitts. base.	(43) 9-14 1/2 Ga.
(21) New Haven, Conn., base.	(44) To fabricators.
(22) Deld. San Francisco Bay	(48) 6-7 Ga.
area.	
(23) Special quality.	(49) 3 1/2 in. and smaller rou
(24) Deduct 0.05c. finer than	9.65c. over 3 1/2 in. and o
15 Ga.	shapes.

AMLESS STANDARD PIPE, Threaded and Coupled

Size—Inches	2	2½	3	3½	4	5	6	
Weight Per Ft	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	
Threads Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Quippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5
Bridge, Pa. N2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5
rain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5
ungstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5

ELECTRIC STANDARD PIPE, Threaded and Coupled

ungtown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
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WELDED STANDARD PIPE, Threaded and Coupled

Size—Inches	¾	1	1½	2	2½	3	3½	4	5	6
Weight Per Ft.	5.5c	6c	6.57	8.5c	11.5c	17c	1.68	2.28	2.8	3.4
Threads Per Ft.	0.24	0.42	0.57	0.85	1.13	1.68	2.28	2.8	3.4	4.0
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Quippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	13.75	+2.5
on, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	11.75	+4.5
nwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	0.25	+15	3.25	+11
ter, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9
na, Pa. N2							2.25	+13	5.25	+9
irless, Pa. N3							0.25	+15	3.25	+11
ntana, Calif. K1							+10.75	+26	+7.75	+22
iana Harbor, Ind. Y1							1.25	+14	4.25	+10
rain, O. N3							2.25	+13	5.25	+9
aron, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9
aron, Pa. M6							0.25	+15	3.25	+11
arrows Pt., Md. B2	2.5	+24	+10.5	+34	+21.5	+43	0.25	+15	3.25	+11
eatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9
ungtown R2, Y1							2.25	+13	5.25	+9

Size—Inches	1½	2	2½	3	3½	4
Weight Per Ft.	27.5c	37c	58.5c	76.5c	92c	\$1.09
Threads Per Ft.	2.72	3.68	5.82	7.62	9.20	10.89
	Blk	Galv*	Blk	Galv*	Blk	Galv*
Quippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5
on, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5
nwood, W. Va. W10	1.5	+25	12.25	+2.25	13.75	+2.5
na, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5
irless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5
ntana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5
iana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5
rain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5
aron, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5
arrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5
eatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5
ungtown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5

*Galvanized pipe discounts based on price of zinc at 11.00c, East St. Louis.

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

	—Re-rolling—	Forging	H.R.	H.R.	Bars	C.R.
	Ingot	Slabs	Strip	Rods	Structural	Strip
1	22.75	25.00	36.00	37.00	43.50	48.50
2	24.75	28.25	37.75	39.00	44.50	49.25
3	24.00	26.00	38.75	37.25	43.50	46.00
4	26.25	29.50	39.50	40.50	44.25	46.75
5	26.50	30.75	42.25	45.75	46.75	49.00
6	33.25	42.50	47.25	49.75	49.75	55.00
7	28.00	31.25	42.00	43.75	47.00	49.50
8	49.75	51.50	54.75	57.75	57.75	63.00
9	29.50	34.75	44.00	47.50	47.00	49.50
10	32.00	36.25	49.00	50.25	54.75	57.75
11	41.25	47.50	60.00	64.50	66.25	69.50
12	51.50	59.50	81.00	84.25	89.75	94.50
13	41.25	47.50	64.50	68.50	71.75	75.75
14	49.75	58.00	79.75	88.25	89.50	94.25
15	33.50	38.00	48.75	53.50	54.50	57.50
16	38.50	48.25	57.75	63.50	63.75	67.25
17	20.25	26.50	30.75	36.00	34.75	36.50
18	17.50	19.50	29.25	31.00	33.25	35.00
19			29.75		33.75	35.50
20			31.50		40.75	42.75
21			17.75		33.75	35.50
22			30.50		34.25	36.00
23			29.75		39.25	43.50
24			40.75		59.00	46.00

Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Abcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; Calstrip Steel Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Barnburn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., org-Warner Corp.; Ellwood Irons Steel Tube Works Inc.; Jessop Steel Co.; Johnson & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Idvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Co. Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Monnds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Mcken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ubrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.; ymour Mfg. Co.

Clad Steel

	Plates	Sheets
	Carbon Base	Carbon Base
	5% 10% 15% 20%	20%
Stainless		
302	26.05	37.50
304	28.80	39.75
304L	30.50	40.15
316	38.20	58.25
316L	42.30	55.65
316 Cb	49.90	65.65
321	31.20	47.25
347	36.90	57.00
405	22.25	29.25
410	20.55	27.00
430	21.20	27.90
Inconel	48.90	80.85
Nickel	41.65	72.70
Nickel, Low Carbon	41.95	74.15
Monel	43.35	74.05

	Strip, Carbon Base	Both Sides
	10% Cold Rolled	
Copper*	\$36.20	\$43.15

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	\$ per lb	Grade	\$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	W Hot Wk. (H-21)	1.425-1.44
Oil Hardening (O-1)	0.505	V-Cr Hot Work (H-13)	0.550
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

W	Cr	V	Co	Mo	AISI Designation	\$ per lb
18	4	1	...	...	T-1	1.840
18	4	2	...	...	T-2	2.005
13.5	4	3	...	...	T-3	2.105
18.25	4.25	1	4.75	...	T-4	2.545
18	4	2	9	...	T-5	2.915
20.25	4.25	1.6	12.95	...	T-6	4.330
13.75	3.75	2	5	...	T-8	2.485
1.5	4	1	...	8.5	M-1	1.200
6.4	4.5	1.9	...	5	M-2	1.345
6	4	3	...	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malleable	Bessemer		Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District									
Birmingham R2	62.00	62.50**			Duluth I-3	68.00	66.50	66.50	67.00
Birmingham U6		62.50**	66.50		Erie, Pa. I-3	66.00	66.50	66.50	67.00
Woodward, Ala. W15	62.00*	62.50**	66.50		Everett, Mass. E1	67.50	68.00	68.50	
Cincinnati, deld.		70.20			Fontana, Calif. K1	75.00	75.50		
					Geneva, Utah C11	66.00	66.50		
					Granite City, Ill. G4	67.90	68.40	68.90	
					Ironton, Utah C11	66.00	66.50		
					Minnequa, Colo. C10	68.00	68.50	69.00	
					Rockwood, Tenn. T3		62.50†	66.50	
					Toledo, Ohio I-3	66.00	66.50	66.50	67.00
					Cincinnati, deld.	72.94	73.44		
Buffalo District									
Buffalo H1, R2	66.00	66.50	67.00	67.50					
N. Tonawanda, N.Y. T9		66.50	67.00	67.50					
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50					
Boston, deld.	77.29	77.79	78.29						
Rochester, N.Y., deld.	69.02	69.52	70.02						
Syracuse, N.Y., deld.	70.12	70.62	71.12						
Chicago District									
Chicago I-3	66.00	66.50	66.50	67.00					
S. Chicago, Ill. R2	66.00	66.50	66.50	67.00					
S. Chicago, Ill. W14	66.00		66.50	67.00					
Milwaukee, deld.	69.02	69.52	69.52	70.02					
Muskegon, Mich., deld.		74.52	74.52						
Cleveland District									
Cleveland R2, A7	66.00	66.50	66.50	67.00					
Akron, Ohio, deld.	69.52	70.02	70.02	70.52					
Mid-Atlantic District									
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50					
Chester, Pa. P4	68.00	68.50	69.00						
Swedeland, Pa. A3	68.00	68.50	69.00	69.50					
New York, deld.		75.50	76.00						
Newark, N.J., deld.	72.69	73.19	73.69	74.19					
Philadelphia, deld.	70.41	70.91	71.41	71.99					
Troy, N.Y. R2	68.00	68.50	69.00	69.50					
Pittsburgh District									
Neville Island, Pa. P6	66.00	66.50	66.50	67.00					
Pittsburgh (N&S sides), Aliquippa, deld.		67.95	67.95	68.48					
McKees Rocks, Pa. deld.		67.60	67.60	68.13					
Lawrenceville, Homestead, Wilmerding Monaca, Pa., deld.		68.26	68.26	68.79					
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35					
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63					
Midland, Pa. C18	66.00								
Youngstown District									
Hubbard, Ohio Y1			66.50						
Sharpsville, Pa. S6	66.00		66.50	67.00					
Youngstown Y1			66.50						
Mansfield, Ohio, deld.	71.30		71.80	72.30					
Duluth I-3									

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302		H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Atlanta	8.59§	9.86§	10.13		8.91	9.39	13.24 #		9.40	9.29	11.21
Baltimore	8.55	9.25	9.99		9.05	9.45	11.85 #	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46		8.51	8.99			9.00	8.89	10.90
Boston	10.07	11.12	11.92	53.50	12.17	10.19	13.30 #	15.64	10.64	10.27	11.95
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65		8.40	8.77	10.46		8.88	8.80	10.66
Chicago	8.25	9.45	10.90	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	11.00	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30			8.85	8.80			8.75	9.15	10.40
Denver	9.40	11.84	12.94		9.43	9.80	11.19		9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95¹⁰		8.60	9.10	11.25		9.35	9.10	10.80
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79			8.84	9.82	10.68		9.33	9.22	11.03
Los Angeles	8.70²	10.80²	12.20	57.60	9.15	9.10²	12.95²	16.35	9.00³	9.10³	11.30³
Memphis, Tenn.	8.59	9.80			8.84	9.32	11.25 #		9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04		8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80			8.84	8.95	9.15		8.99	8.91	
New York	9.17	10.49	11.30	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.65				9.15	9.30	12.75		9.65	9.10	10.50
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95 #	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.65		10.79		9.15	9.55			9.65	9.10	10.60
St. Louis	8.63	9.83	11.28		8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49		8.84	9.21	9.86		9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.60	16.25	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80³	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71		9.48	9.74			9.57	9.57	10.91
Spokane	10.30	11.55	12.50	57.38	10.75	11.00	14.70	16.80	10.20	10.10	13.00
Washington	9.15				9.65	10.05	12.50		10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **4 in. and heavier; ††as annealed; ‡‡3 in. to 4 in. wide, inclusive; §net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; ²—30,000 lb; ³—1000 to 4999 lb; ⁴—1000 to 1999 lb; ⁵—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)
High-Heat Duty: Ashland, Grahn, Hayward, Haldeman, Olive Hill, Ky., Athens, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Cataraugus, Winburne, Snow Shoe, Pa., Bessemer, a., Farber, Mexico, St. Louis, Vandalia, Mo., Ontario, Oak Hill, Parrall, Portsmouth, Ohio, Vandalia, Ill. Stevens Pottery, Ga., Canon City, Colo., \$140; Salina, Pa., \$145; Niles, Ohio, \$138; Cutler, Utah, \$175.
Low-Heat Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, Mo., Stevens Pottery, Ga., \$195; Cutler, Utah, \$18.

Silica Brick (per 1000 pieces*)
Standard: Alexandria, Claysburg, Mt. Union, Piquette, Pa., Ensley, Ala., P. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, Mo., Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., \$163; E. Chicago, Ill., Joliet, Rockdale, Ill., \$168; Canon City, Colo., \$173; Lehi, Utah, \$183; Los Angeles, Calif., \$185.
High-Heat Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Ky., \$158; Morrisville, Hays, Latrobe, Pa., \$163; E. Chicago, Ind., St. Louis, \$168; Canon City, Colo., \$183; Curtner, Calif., \$185.

Semisilica Brick (per 1000 pieces*)
Standard: N. J., Canon City, Colo., \$140; Clearfield, Clearfield, Pa., \$145.

Ladle Brick (per 1000 pieces*)
Standard: Aulsebrook, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrillville, Vanport, Pa., Mexico, Vandalia, Mo., Ellettsville, Irondale, New Salisbury, Ohio, \$175; Clearfield, Pa., Portsmouth, Ohio, \$102.

Metal Powder

per pound f.o.b. shipping
 (net in ton lots for minus
 10 mesh, except as noted)

Cents

Domestic Iron, domestic
 and foreign, 98% Fe:

Minimum trucklots,
 light allowed east of
 Mississippi River:

100 mesh, 100 lb

bags 11.25

100 mesh, 100 lb

pails 9.10

10 mesh, 100 lb

bags 8.10

Electrolytic Iron,
 Melting stock, 99.87%

Fe, irregular frag-

ments of 1/2 in. x

1.3 in. 28.75

Contract lots of 240 tons

(see 22.75c)

annealed, 99.5% Fe.. 36.50

annealed (99 + %

Fe) 36.00

annealed (99 + %

Fe) (minus 325

mesh) 59.00

Water Flake (minus

6, plus 100 mesh).. 29.00

Phenyl Iron:

98.1-98.9%, 3 to 20 mi-

crons, depending on

grade, 93.00-290.00 in

standard 200-lb contain-

ers; all minus 200 mesh.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305 ...	\$5.40	\$5.40	\$5.30	\$5.75
Bar Size Angles	5.10	5.10	5.00	5.43
Structural Angles	5.10	5.10	4.90	5.43
I-Beams	5.11	5.11	5.01	5.45
Channels	5.06	5.06	4.96	5.40
Plates (basic bessemer)	6.20	6.15	6.05	6.51
Sheets, H.R.	8.30	8.30	8.30	8.60
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, 1/2 x 0.30 lb per ft	25.76	25.64	25.64	26.51
Barbed Wire (†)	6.55	6.55	6.55	6.90
Merchant Bars .....	...	...	5.20	5.65
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.19	5.32	5.14	5.49
Wire Rods, O.H. Cold Heading Quality No. 5 ..	5.09	6.22	6.04	6.34
Bright Common Wire Nails (\$)	7.65	7.65	7.65	7.95

†Per 82 lb net reel. ‡Per 100-lb kegs, 20d nails and heavier.

High-Alumina Brick (per 1000 pieces*)
50 Per Cent: St. Louis, Mexico, Vandalia, Mo., Danville, Ill., \$253; Philadelphia, \$265; Clearfield, Pa., \$230; Orviston, Snow Shoe, Pa., \$260.
60 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$310; Danville, Ill., \$313; Clearfield, Orviston, Snow Shoe, Pa., \$320; Philadelphia, \$325.
70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$350; Danville, Ill., \$353; Clearfield, Orviston, Snow Shoe, Pa., \$360; Philadelphia, \$365.

Sleeves (per 1000)
 Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, \$188; Ottawa, Ill., \$205.

Nozzles (per 1000)
 Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, \$310.

Runners (per 1000)
 Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., \$234.

Dolomite (per net ton)
 Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettaville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, \$16.75; Thornton, McCook, Ill., \$17; Dolly Siding, Bonne Terre, Mo., \$15.60.

Magnesite (per net ton)
 Domestic, dead-burned, 1/2 in. grains with fines: Chewelah, Wash., Luning, Nev., \$46; 1/2 in. grains with fines: Baltimore, \$73.

*—9 in x 4 1/2 x 2.50 sts.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF₂ content 72.5%, \$37-\$41; 70%, \$36-\$40; 60%, \$33-\$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, \$30-\$33, contract; Mexican, all rail, duty paid, \$25; barge, Brownsville, Tex., \$27.

Electrodes

Threaded with nipple;
 unboxed, f.o.b. plant

GRAPHITE

—Inches—		Per 100 lb
Diam	Length	
2	24	\$64.00
2 1/2	30	41.50
3	40	39.25
4	40	37.00
5 1/2	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
16	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Ores

Lake Superior Iron Ore
 (Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	\$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore
 Cents per unit, deld. E. Pa.
 New Jersey, concentrates nom.

Foreign Iron Ore
 Cents per unit, c.i.f. Atlantic ports
 Swedish basic, 65% 21.00
 Brazilian iron ore, 68.5% 22.60

Tungsten Ore
 Net ton, unit
 Foreign wolframite, good commercial quality \$10.75-11.00*
 Domestic, concentrates f.o.b. milling points 16.00-17.00†

*Before duty. †Nominal.
Manganese Ore
 Mn 46-48%, Indian 91.5c-96.5c, nom. per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore
 Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian
 48% 3:1 \$42.00-44.00†
 48% 2.8:1 38.00-40.00†
 48% no ratio 29.00-31.00†

South African Transvaal
 44% no ratio 19.75-21.00
 48% no ratio 29.00-31.00

Turkish
 48% 3:1 51.00-55.00†

Domestic
 Rail nearest seller
 18% 3:1 39.00

Molybdenum
 Sulfide concentrate, per lb of Mo content, mines, unpacked \$1.23

Antimony Ore
 Per short ton unit of Sb content, c.i.f. seaboard
 50-55% \$2.25-2.40
 60-65% 2.50-3.10

Vanadium Ore
 Cents per lb V₂O₅
 Domestic 31.00

†Nominal.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace \$14.75-15.25

Connellsville, Pa., foundry 18.00-18.50

Oven Foundry Coke

Birmingham, ovens \$30.35

Cincinnati, deld. 33.34

Buffalo, ovens 32.00

Detroit, ovens 32.00

Pontiac, Mich., deld. 33.95

Saginaw, Mich., deld. 35.53

Erie, Pa., ovens 32.00

Everett, Mass., ovens:

New England, deld. 33.55*

Indianapolis, ovens 31.25

Ironton, Ohio, ovens 30.50

Cincinnati, deld. 33.54

Kearney, N. J., ovens 31.25

Milwaukee, ovens 32.00

Neville Island (Pittsburgh), Pa., ovens.. 30.75

Painesville, Ohio, ovens 32.00

Cleveland, deld. 34.19

Philadelphia, ovens 31.00

St. Louis, ovens 33.00

St. Paul, ovens 31.25

Chicago, deld. 34.73

Swedeland, Pa., ovens 31.00

Terre Haute, Ind., ovens 31.25

*Within \$5.15 freight zone from works.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.

Pure benzene 31.00

Xylene, industrial grade 29.00

Creosote 24.00

Naphthalene, 78 deg 5.00

Toluene, one deg (del. east of Rockies) .. 25.00

Cents per lb, f.o.b. tank cars or tank trucks, deld.

Phenol, 90 per cent grade 15.50

Per net ton bulk, f.o.b. cars or trucks, plant

Ammonium sulfate, regular grade ... \$32.00

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, \$105; 19-21% Mn, 1-3% Si, \$102.50; 16-19% Mn, \$100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, \$245. Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract \$2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump \$253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add \$2.60 for each 1% above 81%; subtract \$2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18.5-21% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 16-18.5%, deduct 0.2c from above prices. For 3% grade, Si 12.5-16%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, \$1.50 per lb of contained Ti; less ton to 300 lb, \$1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot \$1.35, less ton to 300 lb \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. \$240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, \$245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. \$290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, \$295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: C.l. lump, bulk, 28.75c per lb of contained Cr. Delivered.

Charge Chrome 1: Cr 63%, C 6% max, Si 7% max, 22c. Charge Chrome 2: Cr 50-59%, C 8% max, Si 6% max, 23c. Carload, lump, bulk, per lb Cr.

Refined Chrome 1: Cr 50-59%, C 5% max, Si 2% max, 25c. Refined Chrome 2: Si 12% max, 24c. Carload, lump, bulk, per lb Cr.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Delivered.

Cr 67-71%, carload, lump, bulk, 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). C.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). 8M x D, carload bulk 20.05c per lb of alloy, carload packed, 21.25c, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about 1/8" thick) \$1.15 per lb, ton lot \$1.17, less ton lot \$1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, \$3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) \$3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) \$3.40.

Grainal: Vanadium Grainal No. 1 \$1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, \$1.33 per lb contained V₂O₅, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices. **65% Ferrosilicon:** Carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Carload bulk 26.25c per lb of alloy, carload, lump, packed 27.25c, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, \$1.20 per lb of alloy; less than 100 lb \$1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) \$1.20; Grade C (19% min B) \$1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, \$5.25 per lb of contained B. Packed, carload \$5.40, ton to c.l. \$5.50, less ton \$5.60. Delivered.

Carbortam: (B 1 to 2%). Lump, carload \$320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, 14-18% and Si 53-59%). Carload, lump, bulk, 23c per lb of alloy, carload packed 24.25c, lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, 1.5-3%). Carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.9c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3 lb each and containing 2 lb of Cr). Carload, bulk 19.60c per lb of briquet, in bags 20.7c; 3000 lb to c.l. pallets 20.80c; 2000 lb to in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Carload, bulk 14.8c per lb of briquet; c.l. packed, bags 1c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3 1/2 lb and containing 2 lb of Mn and approx 1/2 lb of Si). C.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2 1/2 lb and containing 1 lb of Si). Carload, bulk 8c per lb or briquet packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l.; bags 10.8c; less ton 11.1c. Delivered. Spot, add 0.25c.

Molybdenic-Oxide Briquets: (Containing 2 1/2% of Mo each). \$1.49 per lb of Mo contained f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, \$1 per lb. f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more \$2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.1% max). Ton lots 2" x D, \$3.45 per lb contained Cb; less ton lots \$3.50 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, 0.30% max). Ton lots 2" x D, \$3.05 per lb of contained Cb plus Ta, delivered; less ton lots \$3.10.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7% Fe 20% approx). Carlot bulk 19.25c per lb of alloy, c.l. packed 1/2 in. x 12 M 20.00c, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy, ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; balance Fe). Lump, carload, bulk 19.25c. Packed c. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

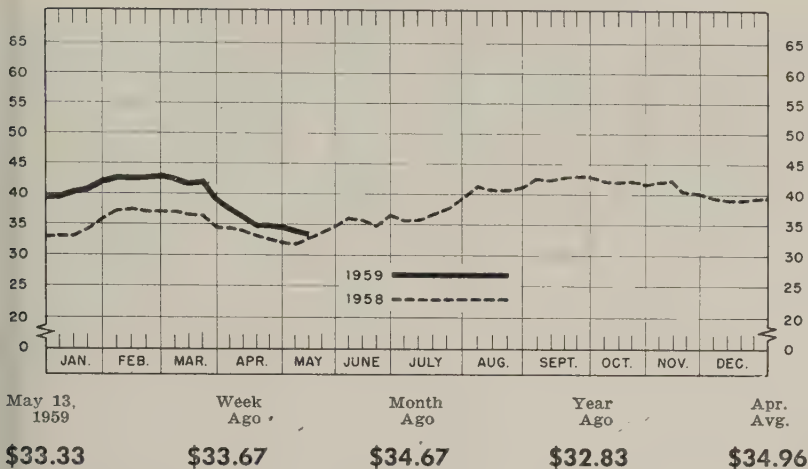
Ferrophosphorus: (23-25% based on 24% content with unitage of \$5 for each 1% of above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., \$12 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., \$1.76 in all sizes except powdered which is \$1.82.

Technical Molybdenic-Oxide: Per lb of contained Mo, in cans, \$1.47; in bags, \$1.46, f.o.b. Langeloth and Washington, Pa.

STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.



Scrap Index Slips a Little More

STEEL's composite on No. 1 heavy melting grade declines 1 cent to \$33.33, lowest in over a year. No marked change expected until steel labor situation is resolved

Scrap Prices, Page 162

Philadelphia—There's no change in prices in the local market. Domestic business is at a virtual standstill, but export demand is zooming. Three boats are loading. One is loading on 14,400 tons of scrap for shipment to Japan. Two others are expected to be loaded before the end of May. Handlers think about 10,000 tons of scrap will be exported from the Philadelphia area this month.

New York — Brokers' buying prices are unchanged throughout the list. Not much activity is noted in the market, but apparently enough business is being done to keep prices steady. Possibly the dull spot is in machine shop turnings, on which prices are nominal. Contributing to steadiness in the open hearth grades is the fairly uniform flow of tonnage in the export market.

Chicago—Steelmaking grades of scrap are down another \$1 a ton on light sales, marking the end of two weeks of stability. No. 1 heavy melting of industrial origin sold for \$34, delivered, No. 1 dealer heavy melting for \$31, No. 2 heavy melt-

ing for \$28, and No. 1 dealer bundles for \$32. At the same time, rerolling rails dropped \$1 to \$56. Sales are limited and are of small tonnages. Cast iron grades and blast furnace material are holding.

• **Pittsburgh** — Railroad No. 1 heavy melting scrap dropped \$1.90 to \$37.10 on the latest list; other grades declined proportionately. Brokers think prices are close to rock bottom, but few expect an upturn before the signing of a new steel labor contract. In the absence of mill buying, the market may be sustained at current levels by brokers' purchases for their own accounts.

• **Cleveland** — Mills are marking time on purchases pending outcome of current labor contract negotiations. Despite the high level of steel production, mill interest in scrap is limited, though breakouts at a couple of blast furnaces in the Valley resulted in a slight increase in scrap use in that area. Prices are unchanged.

• **Youngstown**—The market continues sluggish. Observers doubt there'll be much change in condi-

tions until the uncertainty over the labor situation is ended. No new orders are reported here, the mills being unwilling to commit themselves for more supplies. However, more scrap is being used by local steelmakers because of temporary interruptions in operations at some blast furnaces due to breakdowns.

• **Buffalo**—Open hearth steel, and the turnings grades of scrap have declined \$1 a ton on new mill purchases for May delivery. No. 1 heavy melting is now quoted \$31-\$32, No. 2 heavy melting \$26-\$27, and No. 2 bundles \$21-\$22.

Machine shop turnings are off also, being quoted \$16-\$17. So are short shoveling turnings at \$20-\$21, and mixed borings and turnings at \$18-\$19. The railroad grades, low phos, and cast iron scrap are unchanged.

Scrap is moving freely, but dealers complain that the lower prices are drying up supplies.

• **Cincinnati** — Little change in prices is expected here until June at least. It is getting harder for brokers to buy dealer scrap, low prices serving to dry up tonnage. No. 1 heavy melting is still quoted \$31.50-\$32.50.

• **St. Louis**—The market is slow, but the prices, in general, are fairly steady. No. 1 cupola cast, clean auto cast, and No. 1 railroad heavy melting steel are off \$1 a ton each, but the declines do not indicate any particular pattern of change.

The railroads are still withdrawing various kinds of scrap from their offerings because of the low prices. The mills are not eager to buy, and not much tonnage is being placed on the market.

• **Houston**—Scrap is more active on a moderate order from the Lone Star, Tex., mill. The order must be completed by June 15. Earlier, the Houston mill placed an order that also expires June 15.

On local scrap, brokers are quoting \$33 for No. 1 heavy melting, \$31 for No. 2 heavy melting, and \$24 for No. 2 bundles on the Lone Star order. For scrap from areas with a \$4.11 freight rate, the prices are \$2 higher on the heavy melting (Please turn to Page 168)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported STEEL, May 13, 1959. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

May 13	\$33.33
May 6	33.67
Apr. Avg.	34.96
May 1958	33.21
May 1954	28.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting ..	34.00-35.00
No. 2 heavy melting ..	32.00-33.00
No. 1 dealer bundles ..	37.00-38.00
No. 2 bundles	24.00-25.00
No. 1 busheling	34.00-35.00
No. 1 factory bundles ..	42.00-43.00
Machine shop turnings ..	19.00-20.00
Mixed borings, turnings ..	19.00-20.00
Short shovel turnings ..	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	43.00-44.00
3 ft lengths	42.00-43.00
Heavy turnings	30.00-31.00
Punchings & plate scrap ..	43.00-44.00
Electric furnace bundles ..	42.00-43.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	45.00-46.00
Unstripped motor blocks ..	32.00-33.00
Clean auto cast	46.00-47.00
Drop broken machinery ..	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 2 ft and under ..	54.00-55.00
Rails, 18 in. and under ..	55.00-56.00
Random rails	43.00-49.00
Railroad specialties	47.00-48.00
Angles, splice bars	50.00-51.00
Rails, rerolling	61.00-62.00
Stainless Steel Scrap	
18-8 bundles & solids ..	225.00-230.00
18-8 bundles & solids ..	220.00-225.00
18-8 turnings	115.00-120.00
430 bundles & solids ..	120.00-125.00

CHICAGO

No. 1 hvy melt., indus.	33.00-34.00
No. 1 hvy melt., dealer ..	30.00-31.00
No. 2 heavy melting	27.00-28.00
No. 1 factory bundles	37.00-38.00
No. 1 dealer bundles	31.00-32.00
No. 2 bundles	21.00-22.00
No. 1 busheling, indus.	33.00-34.00
No. 1 busheling, dealer ..	30.00-31.00
Machine shop turnings ..	15.00-16.00
Mixed borings, turnings ..	17.00-18.00
Short shovel turnings ..	17.00-18.00
Cast iron borings	17.00-18.00
Cut structurals, 3 ft	40.00-41.00
Punchings & plate scrap ..	41.00-42.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Stove plate	43.00-44.00
Unstripped motor blocks ..	38.00-39.00
Clean auto cast	53.00-54.00
Drop broken machinery ..	53.00-54.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under ..	52.00-53.00
Rails, 18 in. and under ..	53.00-54.00
Angles, splice bars	46.00-47.00
Axles	61.00-62.00
Rails, rerolling	55.00-56.00

Stainless Steel Scrap

18-8 bundles & solids ..	210.00-215.00
18-8 turnings	110.00-115.00
430 bundles & solids ..	120.00-125.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	26.00-27.00
No. 1 busheling	35.00-36.00
No. 1 bundles	35.00-36.00
No. 2 bundles	23.00-24.00
Machine shop turnings ..	17.00-18.00
Short shovel turnings ..	22.00-23.00
Cast iron borings	22.00-23.00
Low phos	38.00-39.00
Electric furnace bundles ..	38.00-39.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
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CLEVELAND

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	24.00-25.00
No. 1 factory bundles	37.00-38.00
No. 1 bundles	33.00-34.00
No. 2 bundles	24.00-25.00
No. 1 busheling	33.00-34.00
Machine shop turnings ..	14.00-15.00
Short shovel turnings ..	20.00-21.00
Mixed borings, turnings ..	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	35.00-36.00
Cut structurals, plates	
2 ft and under	42.00-43.00
Low phos, punchings & plate ..	34.50-35.50
Alloy free, short shovel turnings ..	22.00-23.00
Electric furnace bundles ..	34.50-35.50

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	38.00-39.00
Heavy breakable cast	38.00-39.00
Stove plate	44.00-45.00
Unstripped motor blocks ..	33.00-34.00
Brake shoes	36.00-37.00
Clean auto cast	50.00-51.00
Burnt cast	37.00-38.00
Drop broken machinery ..	50.00-51.00

Railroad Scrap

R.R. malleable	65.00-66.00
Rails, 2 ft and under ..	57.00-58.00
Rails, 18 in. and under ..	58.00-59.00
Rails, random lengths ..	52.00-53.00
Cast steel	46.00-47.00
Railroad specialties	48.00-49.00
Uncut tires	42.00-43.00
Angles, splice bars	51.00-52.00
Rails, rerolling	58.00-59.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)	
18-8 bundles, solids	215.00-220.00
18-8 turnings	110.00-115.00
430 clips, bundles, solids ..	115.00-125.00
430 turnings	45.00-55.00

ST. LOUIS

(Brokers' buying prices)	
No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	37.00
No. 2 bundles	23.00
No. 1 busheling	37.00
Machine shop turnings ..	16.00†
Short shovel turnings ..	18.00†

Cast Iron Grades

No. 1 cupola	49.00
Charging box cast	42.00
Heavy breakable cast	40.00
Unstripped motor blocks ..	41.00
Clean auto cast	49.00
Stove plate	45.50

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Rails, 18 in. and under ..	49.00
Rails, random lengths ..	42.50
Rails rerolling	52.00†
Angles, splice bars	44.00†

BIRMINGHAM

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	23.00-24.00
No. 1 bundles	29.00-30.00
No. 2 bundles	21.00-22.00
No. 1 busheling	29.00-30.00
Cast iron borings	14.00-15.00
Machine shop turnings ..	20.00-21.00
Short shovel turnings ..	21.00-22.00
Bars, crops and plates ..	38.00-39.00
Structurals & plates	37.00-38.00
Electric furnace	34.00-35.00
2 ft and under	33.00-34.00
3 ft and under	32.00-33.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks ..	40.00-41.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
Rails, 18 in. and under ..	48.00-49.00
Rails, rerolling	52.00-53.00†
Rails, random lengths ..	40.00-41.00
Angles, splice bars	42.00-43.00

PHILADELPHIA

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	36.00-37.00
No. 2 bundles	21.00-22.00
No. 1 busheling	35.00-36.00
Electric furnace bundles ..	38.00-39.00
Mixed borings, turnings ..	20.00†
Short shovel turnings ..	23.00-24.00
Machine shop turnings ..	19.00†
Heavy turnings	32.00-33.00
Structurals & plate	40.00-42.00
Couplers, springs, wheels ..	42.00-43.00
Rail crops, 2 ft and under ..	58.00-60.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	43.00
Drop broken machinery ..	49.00-50.00
Malleable	67.00-68.00

NEW YORK

(Brokers' buying prices)	
No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	26.00-27.00
No. 2 bundles	15.00-16.00
Machine shop turnings ..	9.00-10.00†
Mixed borings, turnings ..	12.00-13.00
Short shovel turnings ..	13.00-14.00
Low phos. (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks ..	24.00-25.00
Heavy breakable	34.00-35.00

Stainless Steel

18-8 sheets, clips, solids	195.00-200.00
18-8 borings, turnings ..	85.00-90.00
410 sheets, clips, solids ..	55.00-60.00
430 sheets, clips, solids ..	85.00-90.00

BUFFALO

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	31.00-32.00
No. 2 bundles	21.00-22.00
No. 1 busheling	31.00-32.00
Mixed borings, turnings ..	18.00-19.00
Machine shop turnings ..	16.00-17.00
Short shovel turnings ..	20.00-21.00
Cast iron borings	18.00-19.00
Low phos structurals and plate, 2 ft and under ..	41.00-42.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	46.00-47.00
No. 1 machinery	50.00-51.00

Railroad Scrap

Rails, random lengths	43.00-44.00
Rails, 3 ft and under	49.00-50.00
Railroad specialties	41.00-42.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)	
No. 1 heavy melting	31.50-32.50
No. 2 heavy melting	26.50-27.50
No. 1 bundles	31.50-32.50
No. 2 bundles	20.00-21.00
No. 1 busheling	31.50-32.50
Machine shop turnings ..	15.00-16.00
Mixed borings, turnings ..	15.00-16.00
Short shovel turnings ..	17.00-18.00
Cast iron borings	16.50-17.50
Low phos., 18 in.	40.00-41.00

Cast Iron Grades

No. 1 cupola	43.00-45.00
Heavy breakable cast	39.00-40.00
Charging box cast	38.00-39.00
Drop broken machinery ..	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 18 in. and under ..	53.00-54.00
Rails, random lengths ..	46.00-47.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)	
No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00
No. 2 bundles	20.00
Machine shop turnings ..	17.00
Short shovel turnings ..	20.00
Low phos. plates & structurals	41.00

Cast Iron Grades

No. 1 cupola	43.00
Heavy breakable	27.00-28.00†
Foundry malleable	37.00
Unstripped motor blocks ..	35.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00
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BOSTON

(Brokers' buying prices; f.o.b. shipping point)	
No. 1 heavy melting	24.00-24.00
No. 2 heavy melting	20.00-20.00
No. 1 bundles	24.00-24.00
No. 1 busheling	24.00-24.00
Machine shop turnings ..	8.00-9.00
Short shovel turnings ..	10.00-11.00
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)	
No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	18.00-19.00
No. 1 bundles	30.00-31.00
No. 2 bundles	17.00-18.00
No. 1 busheling	28.00-29.00
Machine shop turnings ..	10.00-11.00
Mixed borings, turnings ..	11.00-12.00
Short shovel turnings ..	11.00-12.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Stove plate	31.00-32.00
Charging box cast	31.00-32.00
Heavy breakable	31.00-32.00
Unstripped motor blocks ..	19.00-20.00
Clean auto cast	43.00-44.00

SEATTLE

No. 1 heavy melting	33.00
No. 2 heavy melting	31.00
No. 1 bundles	27.00
No. 2 bundles	21.00
Machine shop turnings ..	17.00
Mixed borings, turnings ..	17.00
Electric furnace No. 1 ..	38.00

Cast Iron Grades

No. 1 cupola	34.00
Heavy breakable cast	28.00
Unstripped motor blocks ..	26.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	38.00
No. 2 heavy melting	36.00
No. 1 bundles	35.00
No. 2 bundles	17.00
Machine shop turnings ..	15.00
Shoveling turnings	18.00
Cast iron borings	18.00
Cut structurals and plate 1 ft and under	49.00

Cast Iron Grades

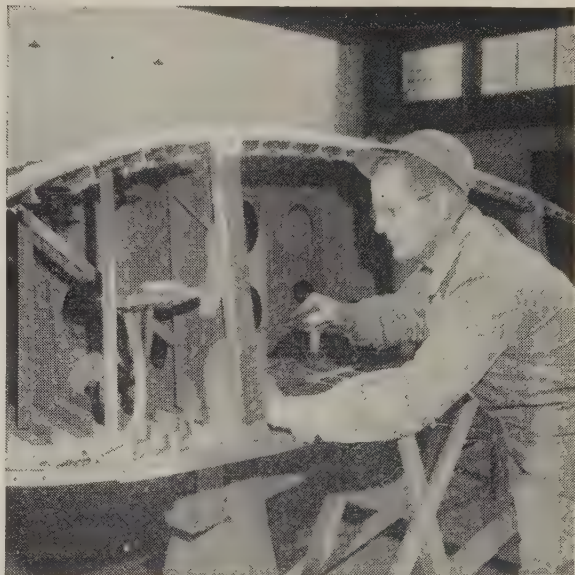
THE U.S. TREASURY SALUTES THE AIRCRAFT INDUSTRY



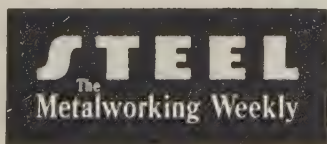
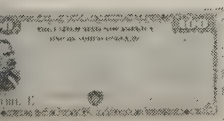
—and its thousands of employees who help strengthen America's Peace Power by buying U.S. Savings Bonds

men and women who make up the great group who design, fabricate, assemble and test our newest aircraft are also making another substantial contribution to our national security. Many thousands of them are buying U.S. Savings Bonds, regularly, through the Payroll Savings Plan. Regular purchases of Shares in America help these patriotic and thrift-minded people set up substantial reserves for the education of their children, the buying of new homes and the building of their retirement funds. Through the Payroll Savings Plan the practice of thrift is made easy and automatic.

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Agree to Lead-Zinc Cutbacks

World producers at UN meeting put voluntary curtailment on production and exports of the two metals. Opinion is split as to ultimate effectiveness. Lead price up

Nonferrous Metal Prices, Pages 166 & 167

MAJOR LEAD and zinc producing and consuming nations have taken what they hope is a big leap forward in firming the world market.

At recently concluded talks at the United Nations, for the first time delegates readily agreed a real problem of overabundance exists. Their solution: Voluntary curtailments in production and exports to whittle down excesses of metal and concentrates that have saturated world consuming centers, particularly the U. S.

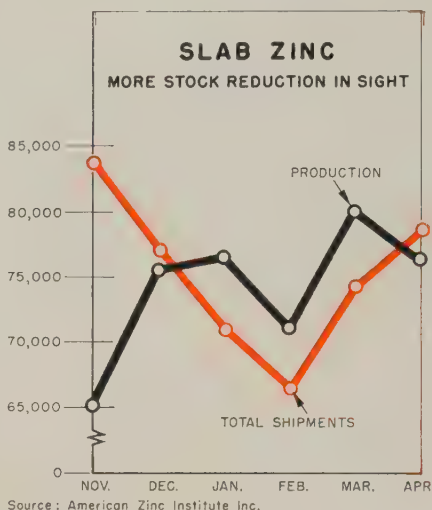
• Hoped for—UN spokesmen estimate that announced intentions of producers would lower 1959's lead metal surplus, originally pegged at 168,000 tons, to an annual rate of 66,080 tons in the second half. For zinc, the drop would be from 134,400 tons to an annual rate of 17,920 tons.

• Reactions Mixed—The UN development brings varying opinions from American producers. For example, American Metal Climax Inc. says it is in perfect agreement with the announcement and "intends to co-operate wholeheartedly with the recommendations of the UN." The company says it will immediately reduce yearly distribution from its Mexican properties by 6500 tons for lead and 2000 tons for zinc, and that effective July 1, it is trimming output at its Blackwell, Okla., zinc smelter by 4000 tons annually.

Simon D. Strauss, vice president-sales for American Smelting & Refining Co., calls the UN action, "definitely a step in the right direction."

Some industry executives are not so enthusiastic. Typical is Andrew Fletcher, president of St. Joseph Lead Co., who agrees the UN action may be a "first step," but doubts the adequacy of voluntary control

efforts on world output. Says Mr. Fletcher: "We still believe that the most equitable solution to the problem of excessive imports of lead and zinc to the U. S. is a tariff that would



apply only when the domestic prices of lead and zinc fall below levels needed to maintain an adequate domestic mining industry."

• The Hitch—There's a strong current of "you'll have to show me" feeling among U. S. producers. They make these points: There's no way to police these agreements to make sure the nation or company is doing what it says it is. Furthermore, a producer could de-

cide at any time to knock off his self-imposed production and export restrictions, and uncommitted producers could bring about chaos by taking advantage of the world market situation.

• Watching and Waiting — Our own government will pay close attention to the results of voluntary controls, but it doesn't anticipate any early move to amend our present system of quotas, say Washington sources. A Capitol Hill observer says the UN action might delay Congressional consideration of several lead-zinc bills now pending but certainly won't permanently forestall action on them.

• Lead Price Up — Certainly the announcement was a bullish influence on the market. Coupled with a somewhat stronger demand and a firming in the scrap market, it triggered a 0.5 cent boost in the lead price to 12 cents a pound on May 7. Leadmen admit the price pattern over the next few weeks isn't clear. Says one: "If buyers are convinced this is the turning point, prices will go up."

The zinc picture is equally cloudy. April sales were the best since November (see chart). The figures don't represent hedge buying either, say metalmen, but rather normal consumption levels brought about by the decline in overstocked inventories. Zinc is subject to the same pressures as lead as the result of the UN meeting, but consensus is the bullish sentiments will be tempered by an anticipated decrease in sales to galvanizers as the steel contract deadline draws near.

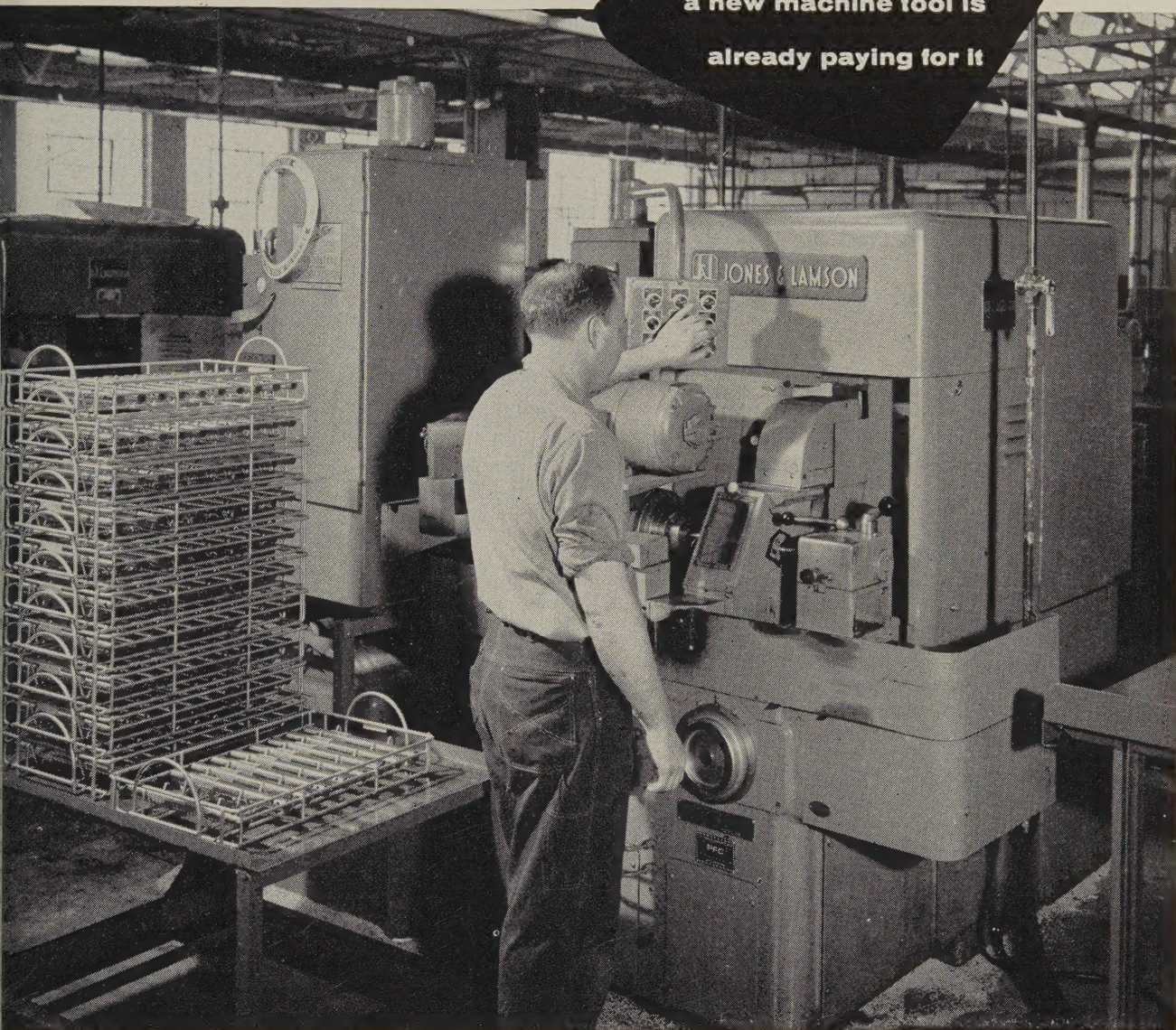
NONFERROUS PRICE RECORD

	Price May 13	Last Change	Previous Price	Apr. Avg	Mar. Avg	May, 1958 Avg
Aluminum .	24.70	Aug. 1, 1958	24.00	24.700	24.700	24.000
Copper	31.50-32.00	Apr. 30, 1959	31.50-32.50	32.404	32.031	24.433
Lead	11.80	May 7, 1959	11.30	10.992	11.238	11.512
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	103.00	May 13, 1959	102.625	102.490	103.000	94.510
Zinc	11.00	Feb. 26, 1959	11.50	11.000	11.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig 99.8%, Velasco, Tex.

JONES & LAMSON FORM GRINDERS

the man who needs
a new machine tool is
already paying for it



Rapid, precise form grinding with PFC keeps outboard motor production at full throttle

The new V-type construction of Evinrude's smooth-running outboard motors is giving power-packed pleasure to boat owners.

In the initial stages of production, however, this new motor posed new, tough manufacturing problems for Evinrude production men.

For example: the prime moving parts of this balanced outboard design are short, rigid crankshafts. The pins of these crankshafts had to be ground to .0005" tolerances on diameter, and to .0001" taper on the length of the pin. Required production: 110 pieces per hour.

J & L Model E Form Grinders proved to be a key factor in meeting these rigid production

requirements while maintaining highest quality standards.

In another Model E application on the same motor, two grooves are formed from the solid in stainless steel propeller shafts at a rate of 146 parts per hour (illustrated). There is *no time out for wheel dressing*, because this machine is equipped with PFC (Perpetual Form Control).

This sort of grinding efficiency can keep your production roaring at full throttle, too. Write for detailed information. Jones & Lamson Machine Company, 517 Clinton Street, Springfield, Vermont.

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, \$71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, \$74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, \$43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: \$2.25 per lb, ton lots.

Cadmium: Sticks and bars, \$1.20 per lb deld.

Cobalt: 97.99%, \$1.75 per lb for 500-lb keg, \$1.77 per lb for 100 lb case; \$1.82 per lb under 100 lb.

Columbium: Powder, \$55-85 per lb, nom.

Copper: Electrolytic, 31.50 deld.; custom smelters, 32.00; lake, 31.50 deld.; fire refined, 31.25 deld.

Germanium: First reduction, less than 1 kg, 41.00 per gram; 1-10 kg, 37.00 per gram; intrinsic grade, 35.00-37.00 per gram.

Gold: U. S. Treasury, \$35 per oz.

Indium: 99.9%, \$2.25 per troy oz.

Iridium: \$75-80 nom. per troy oz.

Lead: Common, 11.80; chemical, 11.90; cor-rod, 11.90; St. Louis, New York basis, add 0.20.

Lithium: 1 lb or 2 lb ingots, less than 100 lb, \$11 per lb; 100-500 lb, \$9.50 per lb; 500 lb or more, \$9 per lb. All prices deld.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, \$245-249 per 76 lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, \$9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: \$70-100 per troy oz nom.

Palladium: \$18-20 per troy oz.

Platinum: \$77-80 per troy oz from refineries.

Radium: \$16-21.50 per mg radium content, depending on quantity.

Rhodium: \$122-125 per troy oz.

Ruthenium: \$55-60 per troy oz.

Selenium: \$7.00 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Rod, \$60 per lb; sheet, \$55 per lb.

Tellurium: \$2.00-2.20 per lb.

Thallium: \$7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 103.00.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), \$1.62-1.82; grade A-2 (0.5% Fe max.), \$1.70 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, \$2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, \$3.30-3.80.

Zinc: Prime Western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 13.50; No. 2, 14.00; No. 5, 13.75 deld.

Zirconium: Reactor grade sponge, 100 lb or less, \$7 per lb; 100-500 lb, \$6.50 per lb; over 500 lb, \$6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy, 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 103 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 23.75; grade 2, 22.50; grade 3, 21.25; grade 4, 19.75.

Brass Ingot: Red brass No. 115, 30.25; tin bronze, No. 225, 41.25; No. 245, 35.00; high-leaded tin bronze, No. 305, 34.50; No. 1 yellow, No. 405, 24.75; manganese bronze, No. 421, 27.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, \$1.91, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, \$1.89, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 36.855; l.c.l., 37.48. Weatherproof, 20,000-lb lots, 37.42; l.c.l., 38.17.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, \$18.00 per cwt; pipe, full coils, \$18.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, \$7.50-17.00; sheared mill plate, \$5.25-10.00; wire, \$5.75-10.00; forging billets, \$3.55-5.75; hot-rolled and forged bars, \$4.25-7.50.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, \$12.50-19.20; H.R. strip, \$12.50-22.90; C.R. strip, \$15.90-31.25; forged or H.R. bars, \$11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness	Flat Sheet	Coiled Sheet
Range Inches		
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.00	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3			
24-60 in. width or diam., 72-240 in. length			
Alloy	Plate Base	Circle B	
1100-F, 3003-F	42.40	47.20	
5050-F	43.50	48.30	
3004-F	44.50	50.20	
5052-F	45.10	50.90	
6061-T6	45.60	51.70	
2024-T4	49.30	56.10	
7075-T6*	57.60	64.70	

*24-48 in. width or diam., 72-180 in. length

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round	Hexagonal
2011-T3	2017-T4	2011-T3
0.125	76.90	73.90
0.250	62.00	60.20
0.375	61.20	60.00
0.500	61.20	60.00
0.625	61.20	60.00
0.750	59.70	58.40
0.875	59.70	58.40
1.000	59.70	58.40
1.125	57.30	56.10
1.250	57.30	56.10
1.350	57.30	56.10
1.500	57.30	56.10
1.625	55.00	53.60
1.750	55.00	53.60
1.875	55.00	53.60
2.000	55.00	53.60
2.125	53.50	52.10
2.250	53.50	52.10
2.375	53.50	52.10
2.500	53.50	52.10
2.625	51.90	50.40
2.750	51.90	50.40
2.875	51.90	50.40
3.000	51.90	50.40
3.125	51.90	50.40
3.250	51.90	50.40
3.375	51.90	50.40

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2011-T3, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.70-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: 1/2 in., 18.75; 1 in., 29.75; 1 1/2 in., 40.30; 2 in., 48.15; 2 1/2 in., 58.30; 3 in., 68.20; 4 in., 78.75; 6 in., 108.25; 8 in., 138.25; 10 in., 168.25; 12 in., 198.25; 14 in., 228.25; 16 in., 258.25; 18 in., 288.25; 20 in., 318.25; 22 in., 348.25; 24 in., 378.25; 26 in., 408.25; 28 in., 438.25; 30 in., 468.25; 32 in., 498.25; 34 in., 528.25; 36 in., 558.25; 38 in., 588.25; 40 in., 618.25; 42 in., 648.25; 44 in., 678.25; 46 in., 708.25; 48 in., 738.25; 50 in., 768.25; 52 in., 798.25; 54 in., 828.25; 56 in., 858.25; 58 in., 888.25; 60 in., 918.25; 62 in., 948.25; 64 in., 978.25; 66 in., 1008.25; 68 in., 1038.25; 70 in., 1068.25; 72 in., 1098.25; 74 in., 1128.25; 76 in., 1158.25; 78 in., 1188.25; 80 in., 1218.25; 82 in., 1248.25; 84 in., 1278.25; 86 in., 1308.25; 88 in., 1338.25; 90 in., 1368.25; 92 in., 1398.25; 94 in., 1428.25; 96 in., 1458.25; 98 in., 1488.25; 100 in., 1518.25; 102 in., 1548.25; 104 in., 1578.25; 106 in., 1608.25; 108 in., 1638.25; 110 in., 1668.25; 112 in., 1698.25; 114 in., 1728.25; 116 in., 1758.25; 118 in., 1788.25; 120 in., 1818.25; 122 in., 1848.25; 124 in., 1878.25; 126 in., 1908.25; 128 in., 1938.25; 130 in., 1968.25; 132 in., 1998.25; 134 in., 2028.25; 136 in., 2058.25; 138 in., 2088.25; 140 in., 2118.25; 142 in., 2148.25; 144 in., 2178.25; 146 in., 2208.25; 148 in., 2238.25; 150 in., 2268.25; 152 in., 2298.25; 154 in., 2328.25; 156 in., 2358.25; 158 in., 2388.25; 160 in., 2418.25; 162 in., 2448.25; 164 in., 2478.25; 166 in., 2508.25; 168 in., 2538.25; 170 in., 2568.25; 172 in., 2598.25; 174 in., 2628.25; 176 in., 2658.25; 178 in., 2688.25; 180 in., 2718.25; 182 in., 2748.25; 184 in., 2778.25; 186 in., 2808.25; 188 in., 2838.25; 190 in., 2868.25; 192 in., 2898.25; 194 in., 2928.25; 196 in., 2958.25; 198 in., 2988.25; 200 in., 3018.25; 202 in., 3048.25; 204 in., 3078.25; 206 in., 3108.25; 208 in., 3138.25; 210 in., 3168.25; 212 in., 3198.25; 214 in., 3228.25; 216 in., 3258.25; 218 in., 3288.25; 220 in., 3318.25; 222 in., 3348.25; 224 in., 3378.25; 226 in., 3408.25; 228 in., 3438.25; 230 in., 3468.25; 232 in., 3498.25; 234 in., 3528.25; 236 in., 3558.25; 238 in., 3588.25; 240 in., 3618.25; 242 in., 3648.25; 244 in., 3678.25; 246 in., 3708.25; 248 in., 3738.25; 250 in., 3768.25; 252 in., 3798.25; 254 in., 3828.25; 256 in., 3858.25; 258 in., 3888.25; 260 in., 3918.25; 262 in., 3948.25; 264 in., 3978.25; 266 in., 4008.25; 268 in., 4038.25; 270 in., 4068.25; 272 in., 4098.25; 274 in., 4128.25; 276 in., 4158.25; 278 in., 4188.25; 280 in., 4218.25; 282 in., 4248.25; 284 in., 4278.25; 286 in., 4308.25; 288 in., 4338.25; 290 in., 4368.25; 292 in., 4398.25; 294 in., 4428.25; 296 in., 4458.25; 298 in., 4488.25; 300 in., 4518.25; 302 in., 4548.25; 304 in., 4578.25; 306 in., 4608.25; 308 in., 4638.25; 310 in., 4668.25; 312 in., 4698.25; 314 in., 4728.25; 316 in., 4758.25; 318 in., 4788.25; 320 in., 4818.25; 322 in., 4848.25; 324 in., 4878.25; 326 in., 4908.25; 328 in., 4938.25; 330 in., 4968.25; 332 in., 4998.25; 334 in., 5028.25; 336 in., 5058.25; 338 in., 5088.25; 340 in., 5118.25; 342 in., 5148.25; 344 in., 5178.25; 346 in., 5208.25; 348 in., 5238.25; 350 in., 5268.25; 352 in., 5298.25; 354 in., 5328.25; 356 in., 5358.25; 358 in., 5388.25; 360 in., 5418.25; 362 in., 5448.25; 364 in., 5478.25; 366 in., 5508.25; 368 in., 5538.25; 370 in., 5568.25; 372 in., 5598.25; 374 in., 5628.25; 376 in., 5658.25; 378 in., 5688.25; 380 in., 5718.25; 382 in., 5748.25; 384 in., 5778.25; 386 in., 5808.25; 388 in., 5838.25; 390 in., 5868.25; 392 in., 5898.25; 394 in., 5928.25; 396 in., 5958.25; 398 in., 5988.25; 400 in., 6018.25; 402 in., 6048.25; 404 in., 6078.25; 406 in., 6108.25; 408 in., 6138.25; 410 in., 6168.25; 412 in., 6198.25; 414 in., 6228.25; 416 in., 6258.25; 418 in., 6288.25; 420 in., 6318.25; 422 in., 6348.25; 424 in., 6378.25; 426 in., 6408.25; 428 in., 6438.25; 430 in., 6468.25; 432 in., 6498.25; 434 in., 6528.25; 436 in., 6558.25; 438 in., 6588.25; 440 in., 6618.25; 442 in., 6648.25; 444 in., 6678.25; 446 in., 6708.25; 448 in., 6738.25; 450 in., 6768.25; 452 in., 6798.25; 454 in., 6828.25; 456 in., 6858.25; 458 in., 6888.25; 460 in., 6918.25; 462 in., 6948.25; 464 in., 6978.25; 466 in., 7008.25; 468 in., 7038.25; 470 in., 7068.25; 472 in., 7098.25; 474 in., 7128.25; 476 in., 7158.25; 478 in., 7188.25; 480 in., 7218.25; 482 in., 7248.25; 484 in., 7278.25; 486 in., 7308.25; 488 in., 7338.25; 490 in., 7368.25; 492 in., 7398.25; 494 in., 7428.25; 496 in., 7458.25; 498 in., 7488.25; 500 in., 7518.25; 502 in., 7548.25; 504 in., 7578.25; 506 in., 7608.25; 508 in., 7638.25; 510 in., 7668.25; 512 in., 7698.25; 514 in., 7728.25; 516 in., 7758.25; 51

on turnings, 18.00-18.50; new brass clip-
17.50-18.00; light brass, 13.00-13.50;
yellow brass, 14.00-14.50; new brass rod
15.00-15.50; auto radiators, unsweated,
15.00; cocks and faucets, 15.50-16.00;
pipe, 15.50-16.00.

Soft scrap lead, 7.75-8.25; battery
2.25-2.50; linotype and stereotype, 9.25-
electrotype, 7.75-8.25; mixed babbitt,
0.00.

: Clippings, 26.00-28.00; old sheets,
25.00; turnings, 20.00-21.00; rods, 26.00-

: Sheets and clips, 52.00-54.00; rolled
s, 52.00-54.00; turnings, 38.00-40.00; rod
52.00-54.00.

Old zinc, 3.25-3.50; new diecast scrap,
25; old diecast scrap, 1.75-2.00.

num: Old castings and sheets, 9.75-
clean borings and turnings, 6.25-6.75;
ated low copper clips, 13.00-13.50; segre-
high copper clips, 13.00-13.50; mixed low
clips, 12.00-12.50; mixed high copper
11.00-11.50.

(Cents per pound, Chicago)

num: Old castings and sheets, 11.75-
clean borings and turnings, 9.50-10.00;
ated low copper clips, 16.75-17.25; segre-
high copper clips, 15.75-16.25; mixed low
clips, 16.00-16.50; mixed high copper
15.25-15.75.

(Cents per pound, Cleveland)

num: Old castings and sheets, 10.50-
clean borings and turnings, 9.50-10.00;
ated low copper clips, 14.50-15.00; seg-
d high copper clips, 13.00-13.50; mixed
copper clips, 13.50-14.00; mixed high cop-
ps, 12.50-13.00.

REFINERS' BUYING PRICES

per pound, carlots, delivered refinery)
um Copper: Heavy scrap, 0.020-in. and
r, not less than 1.5% Be, 57.50; light
52.50; turnings and borings, 37.50.

and Brass: No. 1 heavy copper and
27.25; No. 2 heavy copper and wire,
light copper, 23.75; refinery brass
copper) per dry copper content, 25.50.

NGOTMAKERS' BUYING PRICES

and Brass: No. 1 heavy copper and
27.25; No. 2 heavy copper and wire,
light copper, 23.75; No. 1 composition
s, 20.50; No. 1 composition solids, 21.00;
yellow brass solids, 15.00; yellow brass
gs, 14.00; radiators, 16.00.

PLATING MATERIAL

shipping point, freight allowed on
(tes)

ANODES

um: Special or patented shapes, \$1.20.

: Flat-rolled, 47.79; oval, 46.00, 5000-
lb; electrodeposited, 40.50, 2000-5000
; cast, 43.00, 5000-10,000 lb quantities.
Depolarized, less than 100 lb, 114.25;
27.00; No. 2 heavy copper and wire,
light copper, 23.75; refinery brass
3 cents a lb.

ar or slab, less than 200 lb, 121.50; 200-
120.00; 500-999 lb, 119.50; 1000 lb or
119.00.

Balls, 18.00; flat tops, 18.00; flats,
ovals, 20.00, ton lots.

CHEMICALS

um Oxide: \$1.30 per lb in 100-lb drums.
to Acid (flake): 100-2000 lb, 31.00; 2000-
lb, 30.50; 10,000-20,000 lb, 30.00; 20-
or more, 29.50.

r Cyanide: 100-200 lb, 65.90; 300-900
00; 1000-19,900 lb, 61.90.

r Sulphate: 100-1900 lb, 15.30; 2000-5900
30; 6000-11,900 lb, 13.05; 12,000-22,900
80; 23,000 lb or more, 12.30.

Chloride: 100 lb, 45.00; 200 lb, 43.00;
42.00; 400-4900 lb, 40.00; 5000-9900 lb,
10,000 lb or more, 37.00.

Sulphate: 5000-22,999 lb, 29.00; 23,000-
lb, 28.50; 40,000 lb or more, 28.00.

a Cyanide (Cyanobrik): 200 lb, 20.80;
0 lb, 19.80; 1000-19,800 lb, 18.80; 20,000
lb or more, 17.80.

a Stannate: Less than 100 lb, 80.10; 100-
70.70; 700-1900 lb, 63.00; 2000-9900 lb,
10,000 lb or more, 64.80.

us Chloride (Anhydrous): 25 lb, 155.60;
150.70; 400 lb, 148.30; 800-19,900 lb,
20,000 lb or more, 101.30.

us Sulphate: Less than 50 lb, 140.70;
110.70; 100-1900 lb, 108.70; 2000 lb or
106.70.

yanide: 100-200 lb, 59.00; 300-900 lb,

MODERN OVERHEAD CRANES

CAN BE INSPECTED IN OPERATION

Capacity	Name	Span	Lift
150 Tons (2-75 T. Trolleys)	Shepard Niles	100'	39'
20 Tons (2-10 T. Trolleys)	N.B.P.	71' 10"	25' 6"

(All Cranes 230 Volts DC—All Late Model Cranes)

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Mr. Schwartz—LOcust 2-6362

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Analytical chemist for stainless steel foundry. Must be a graduate with ability to qualify for chief chemist. Equipment includes spectroscope. Write Box 763, STEEL, Penton Bldg., Cleveland 13, Ohio.

Reinforcing steel yard foreman trainee; knowledge of blue print estimating and detailing; age 24-39; write to Rinker Materials Corp., P. O. Box 231, W. Palm Beach, Fla.

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WANTED: MANUFACTURERS' AGENT for New England territory to represent light hammer closed die forge plant. Please send particulars and lines now represented. Box 760, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

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All Types of manufacturing. Stampings, Heavy Machining and Equipment, Automotive. Excelling in Production Control, Tooling, Tool and Product Design. Composite experience in Purchasing, Logistics, Personnel etc. Have been on foreign assignments in complete control of all phases in setting up manufacturing facility. Knowledge of Export and Import Procedures. Speak Spanish. Interested in five figure salary with benefits. Highest integrity and capabilities. Will accept foreign assignment. Reply Box 764, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALES MANAGER with 25 years experience in steel tubular products will relocate. Reply Box 765, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Walter E. Remmers

President

Pittsburgh Metallurgical Co., Inc.
Box 368 Niagara Falls, N. Y.

(Concluded from Page 161)

grades, and \$1 higher on bundles.

With both mills taking scrap, shippers are assured of a fairly active period.

Texas border scrapmen are working on a fair-sized Mexican order on which brokers are paying \$37 for No. 1, and \$34 for No. 2, delivered border points.

• **Birmingham**—A large local electric furnace operator placed his May scrap orders at prices \$1 to \$2 a ton under his last purchase. Foundries also have cut their prices on steel scrap. Purchases of cast iron scrap by pipe manufacturers have increased, and prices are unchanged on that grade. Brokers say dealer resistance to price cuts is increasing; they are having difficulty filling orders. Dealer intake continues slow.

• **Detroit**—Prices moved up slightly on the strength of orders by Great Lakes Steel Corp. and Ford Motor Co. Dealers feel the move is insignificant, but brokers say it may indicate improvement in local market conditions.

• **Seattle**—Lack of new export business and desultory buying by domestic consumers have resulted in a further weakening of prices. No. 1 heavy melting is now quoted \$33, and No. 2 heavy melting \$31, both grades being off \$2 a ton. The outlook is uncertain. No signs of improvement in demand are seen.

• **San Francisco** — Although the steel mills are operating at capacity in this district (one being engaged at 111 per cent), the movement of steel scrap continues sluggish.

• **Los Angeles**—Demand is weaker. The domestic mills are not adding much tonnage to their inventories, and it's reported Japan is cutting its recent huge order in half.

Distributors . . .

Prices, Page 156

The steel service centers report a steady increase in business. They find it encouraging, but "nothing sensational." Most of the buying is being done by regular customers, and reflects higher consumption

rather than scare buying.

"Sales are picking up," a Pittsburgh distributor says, "but not as much as you'd expect when all the mills are sold out for the first half. We may see a last minute rush next month if it looks like a strike is unavoidable."

Structural Shapes . . .

Structural Shape Prices, Page 151

Although far from the peak of several weeks ago, structural steel demand has picked up at some market centers. In the East, there is more bridgework and miscellaneous commercial inquiry is more active. Most large and medium size fabricating shops can no longer accept work for delivery before late September, even assuming no steel strike this summer.

Various fabricating shops have labor contracts which run through the summer, and in some cases beyond. So even if there's a strike against steel producers, they shouldn't be confronted with labor stoppages at the same time. Their main problem this summer will be to have sufficient inventories to proceed fairly comfortably with work in hand. They are driving hard to get all the tonnage promised them for delivery before July 1. In some cases, they are seeking to place additional tonnage with the mills.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2000 tons, agricultural-engineering buildings, University of West Virginia, Morgantown, W. Va., to Levinson Steel Co., Pittsburgh; John McShain Inc., Baltimore, general contractor.

1115 tons, state highway structures, Greenfield-Barnardston, Mass., to Haarmann Steel Co., Holyoke, Mass.; Daniel O'Connell's Sons Corp., Holyoke, general contractor.

688 tons, 158 tons of reinforcing bars two Washington State highway spans, Yakima County, to Bethlehem Pacific Coast Steel Corp., Seattle; John E. Alexander, Seattle, general contractor.

433 tons, state bridgework, Queens County, New York, through Slattery Construction Co., general contractor, to Pine Brook Iron Works, Scranton, Pa.

350 tons, structurals and reinforcing bars, high school, Stamford, Conn., to Leake & Nelson Co., Bridgeport (structurals), and Fireproof Products Co., New York (reinforcing bars); George L. Hickey, Inc., Stamford, general contractor.

275 tons, plant for R. T. French, Shelley, Idaho, to Gate City Steel Inc., Boise, Idaho.

225 tons, petroleum lubrication facilities, Naval Radio Station, Cutler, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; Robert A. Verrier Construction Co., Portland, Maine, general contractor.

170 tons, bridge at Greer's ferry dam, Arkansas, to Gate City Steel Inc., Boise, Idaho; Morrison-Knudsen Co. general contractor.

150 tons, four galvanized steel radio relay towers, Spokane to Seattle, to Gate City Steel Inc., Boise, Idaho.

135 tons, courthouse and federal building,

Minneapolis, Minn., to Standard Iron & W. Co.; Ring Construction Co., Minneapolis, general contractor.

100 tons, building, Lafayette National Bank, Brooklyn, N. Y., through George F. Driscoll Co., general contractor, to County Line Iron Works.

STRUCTURAL STEEL PENDING

6300 tons, transmission towers, Niagara County, New York, for New York State Power Authority, bids May 21.

3615 tons, miscellaneous state bridgework, Warren, Onondaga, Columbia, and Broome Counties, New York; bids closed May 14.

2000 tons, state bridgework, Bronx, N. Y., Gull Contracting Co., Flushing, N. Y., on general contract.

1700 tons, spillway gates, locks, etc., Harbor Dam, Snake River; Guy F. Atkinson Co., South San Francisco, low at \$20,744, to the U. S. Engineer, Walla Walla, Wash.

1500 tons, municipal incinerator, Hamilton Avenue, Brooklyn, N. Y.; bids May 20.

900 tons, New York Telephone Co. building, Scarsdale, N. Y.; bids closed May 15.

500 tons, Grace Institute, Lexington Avenue and E. 75th Street, New York; bids closed.

455 tons, state bridgework, Chemung County, New York, Bero Construction Co., Buffalo, low on general contract.

400 tons, state bridgework, Cattaraugus and Erie Counties, New York, Union Construction Co. low on general contract.

365 tons, highway office building, Boise, Idaho; Gate City Steel Inc., Boise, is bidder; R. E. Rice Construction Co., Boise, general contractor.

335 tons, embedded structural steel guide sills and head beams, intake gates at stoplogs, Niagara contract NP-39; bids July 2, Power Authority, State of New York.

100 tons or more, hangar addition and other buildings, Ft. Richardson, Alaska, air base, Lease Co. Inc., Seattle, is low at \$597, to U. S. Engineer.

REINFORCING BARS . . .

REINFORCING BARS PLACED

2000 tons, Bon Marche parking garage, Seattle, to Joseph T. Ryerson & Son Inc., Seattle; Utah Construction Co., Seattle, general contractor.

1500 tons, ballistics center, eastern Washington State, to Bethlehem Pacific Coast Steel Corp., Seattle; Patti-MacDonald Co. & Associates, general contractor.

1000 tons or more, federal office building, General Services Administration, Washington, to Bethlehem Steel Co., Bethlehem, Pa.; McCloskey & Co., Philadelphia, general contractor; steel piles also to be supplied by Bethlehem Steel Co.

950 tons, courthouse and federal building, Minneapolis, to United States Steel Supply Div., U. S. Steel Corp., Pittsburgh; Ring Construction Co., Minneapolis, general contractor.

510 tons, two undercrossings for freeway projects, Seattle, to Northwest Steel Rolling Mills Inc., Seattle; MacRae Bros., Seattle, general contractor.

485 tons, steel sheet piling, Walter F. Geolock and dam, Ft. Gaines, Ga., to Bethlehem Steel Co., Bethlehem, Pa.

450 tons, state highway bridge, Greenfield-Barnardston, Mass., to Scherer Steel Co.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Pakistan, 31 turbocharged 1800 hp diesel locomotives, to Alco Products Inc., New York.

RAILROAD CARS PLACED

Norfolk & Western, 35 fifty-ft boxcars, Pullman-Standard Car Mfg. Corp., Chicago. This road will also buy 10 fifty-ton bulkhead flatcars, and will convert at its own shops 50 gondolas for handling pulpwood and equip 15 boxcars with deloaders.

Western Pacific, 60 freight cars, comprising 50 seventy-ton gondolas, placed with A. Industries, New York, and 10 seventy-ton covered hoppers, placed with Pullman-Standard Car Mfg. Corp., Chicago. Twenty-five of the gondolas and the 10 hoppers are for the company's subsidiary, Sacramento Northern.